Installation and service instructions

for contractors

Vitodens 200-W
Type B2HE, B2KE, 1.9 to 32 kW
Wall mounted gas condensing boiler
Natural gas and LPG version

VITODENS 200-W

6131235 GB 6/2019

Please keep safe.

Safety instructions

Please follow these safety instructions closely to prevent accidents and material losses.

Safety instructions explained

Danger
This symbol warns against the risk of injury.

Please note
This symbol warns against the risk of material losses and environmental pollution.

Note
Details identified by the word "Note" contain additional information.

Target group

These instructions are exclusively intended for qualified contractors.

- Work on gas installations may only be carried out by a registered gas fitter.
- Work on electrical equipment may only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

Regulations to be observed

- National installation regulations
- Statutory regulations for the prevention of accidents
- Statutory regulations for environmental protection
- Codes of practice of the relevant trade associations
- Relevant country-specific safety regulations

Safety instructions for working on the system

Working on the system

- Where gas is used as the fuel, close the main gas shut-off valve and safeguard it against unintentional reopening.
- Isolate the system from the power supply, e.g. by removing the separate fuse or by means of a mains isolator, and check that it is no longer live.
- Safeguard the system against reconnection.
- Wear suitable personal protective equipment when carrying out any work.

Danger
Hot surfaces and fluids can lead to burns or scalding.
- Before maintenance and service work, switch OFF the appliance and let it cool down.
- Never touch hot surfaces on the boiler, burner, flue system or pipework.

Please note
Electronic assemblies can be damaged by electrostatic discharge.
Prior to commencing work, touch earthed objects such as heating or water pipes to discharge static loads.

Repair work

Please note
Repairing components that fulfil a safety function can compromise the safe operation of the system.
Replace faulty components only with genuine Viessmann spare parts.

Auxiliary components, spare and wearing parts

Please note
Spare and wearing parts that have not been tested together with the system can compromise its function. Installing non-authorised components and making non-approved modifications or conversions can compromise safety and may invalidate our warranty.
For replacements, use only original spare parts supplied or approved by Viessmann.

Safety instructions (cont.)

Safety instructions for operating the system

If you smell gas

Danger
Escaping gas can lead to explosions which may result in serious injury.
- Do not smoke. Prevent naked flames and sparks. Never switch lights or electrical appliances on or off.
- Close the gas shut-off valve.
- Open windows and doors.
- Evacuate any people from the danger zone.
- Notify your gas or electricity supply utility from outside the building.
- Have the power supply to the building shut off from a safe place (outside the building).

If you smell flue gas

Danger
Flue gas can lead to life threatening poisoning.
- Shut down the heating system.
- Ventilate the installation site.
- Close doors to living spaces to prevent flue gases from spreading.

What to do if water escapes from the appliance

Danger
If water escapes from the appliance there is a risk of electrocution.
Switch OFF the heating system at the external isolator (e.g. fuse box, domestic distribution board).

Danger
If water escapes from the appliance there is a risk of scalding.
Never touch hot heating water.

Condensate

Danger
Contact with condensate can be harmful to health.
Never let condensate touch your skin or eyes and do not swallow it.

Flue systems and combustion air

Ensure that flue systems are clear and cannot be sealed, for instance due to accumulation of condensate or other external causes.
Ensure an adequate supply of combustion air.
Inform system users that subsequent modifications to the building characteristics are not permissible (e.g. cable/pipework routing, cladding or partitions).

Danger
Leaking or blocked flue systems, or an inadequate supply of combustion air can cause life threatening poisoning from carbon monoxide in the flue gas.
Ensure the flue system is in good working order.
Vents for supplying combustion air must be non-sealable.

Extractors

Operating appliances that exhaust air to the outside (extractor hoods, extractors, air conditioning units, etc.) can create negative pressure. If the boiler is operated at the same time, this can lead to a reverse flow of flue gas.

Danger
The simultaneous operation of the boiler and appliances that exhausts air to the outside can result in life threatening poisoning due to a reverse flow of flue gas.
Fit an interlock circuit or take suitable steps to ensure an adequate supply of combustion air.

Index

Index (cont.)

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Disposal of packaging

Please dispose of packaging waste in line with statutory regulations.

Symbols

Symbol	Meaning
	Reference to other document containing further information
	Step in a diagram: The numbers correspond to the order in which the steps are carried out.
	Warning of material losses and environmental pollution
	Live electrical area
	Pay particular attention.
	▪ Component must audibly click into place. or ▪ Acoustic signal
	▪ Fit new component. or ▪ In conjunction with a tool: Clean the surface.
	Dispose of component correctly.
	Dispose of component at a suitable collection point. Do **not** dispose of component in domestic waste.

The steps in connection with commissioning, inspection and maintenance are found in the "Commissioning, inspection and maintenance" section and identified as follows:

Symbol	Meaning
	Steps required during commissioning
	Not required during commissioning
	Steps required during inspection
	Not required during inspection
	Steps required during maintenance
	Not required during maintenance

Intended use

The appliance is intended solely for installation and operation in sealed unvented heating systems that comply with EN 12828, with due attention paid to the associated installation, service and operating instructions. It is only designed for heating up heating water that is of potable water quality.

Intended use presupposes that a fixed installation in conjunction with permissible, system-specific components has been carried out.

Commercial or industrial usage for a purpose other than heating the building or DHW shall be deemed inappropriate.

Any usage beyond this must be approved by the manufacturer in each individual case.

Intended use (cont.)

Incorrect usage or operation of the appliance (e.g. the appliance being opened by the system user) is prohibited and will result in an exclusion of liability. Incorrect usage also occurs if the components in the heating system are modified from their intended use (e.g. if the flue gas and ventilation air paths are sealed).

Product information

Vitodens 200-W, type B2HE, B2KE

Wall mounted gas condensing boiler with Inox-Radial heat exchanger and the following integrated components:

- Modulating MatriX Plus burner for natural gas and LPG
- Hydraulics with 3-way diverter valve and variable speed high efficiency circulation pump
- Type B2KE: Plate heat exchanger for DHW heating
- Weather-compensated or constant temperature control unit
- Integral diaphragm expansion vessel (10 l capacity)

The selected gas category in the delivered condition and the associated nominal gas pressure are given on the boiler type plate. The type plate also shows the other gas types and pressures with which the boiler can be operated. A conversion within the stated natural gas groups is not required. For switching to LPG or natural gas M (without conversion kit), see "Commissioning, inspection and maintenance".

Type plate

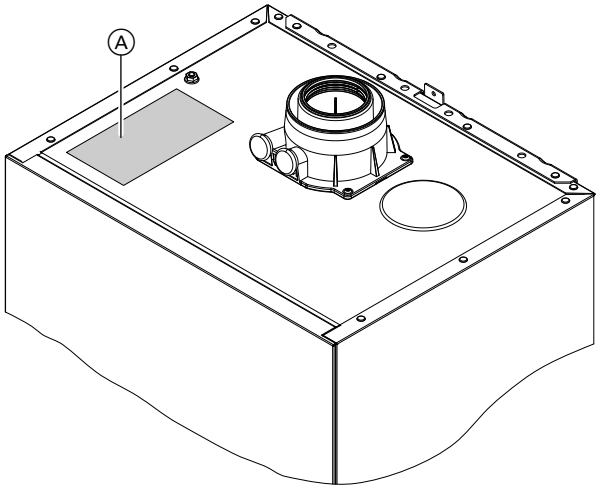

Fig. 1

Ⓐ Type plate
The Vitodens 200-W may only be delivered to countries listed on the type plate. For deliveries to other countries, approved contractors must arrange individual approval on their own initiative and in accordance with the law of the country in question.

System examples

System examples with hydraulic and electrical connection diagrams and function descriptions are available to help setting up the heating system.

Detailed information on system examples can be found at: **www.viessmann-schemes.com**

Spare parts lists

Information about spare parts can be found on the Viessmann spare parts app.

Download on the App Store

GET IT ON Google Play

Preparing for installation

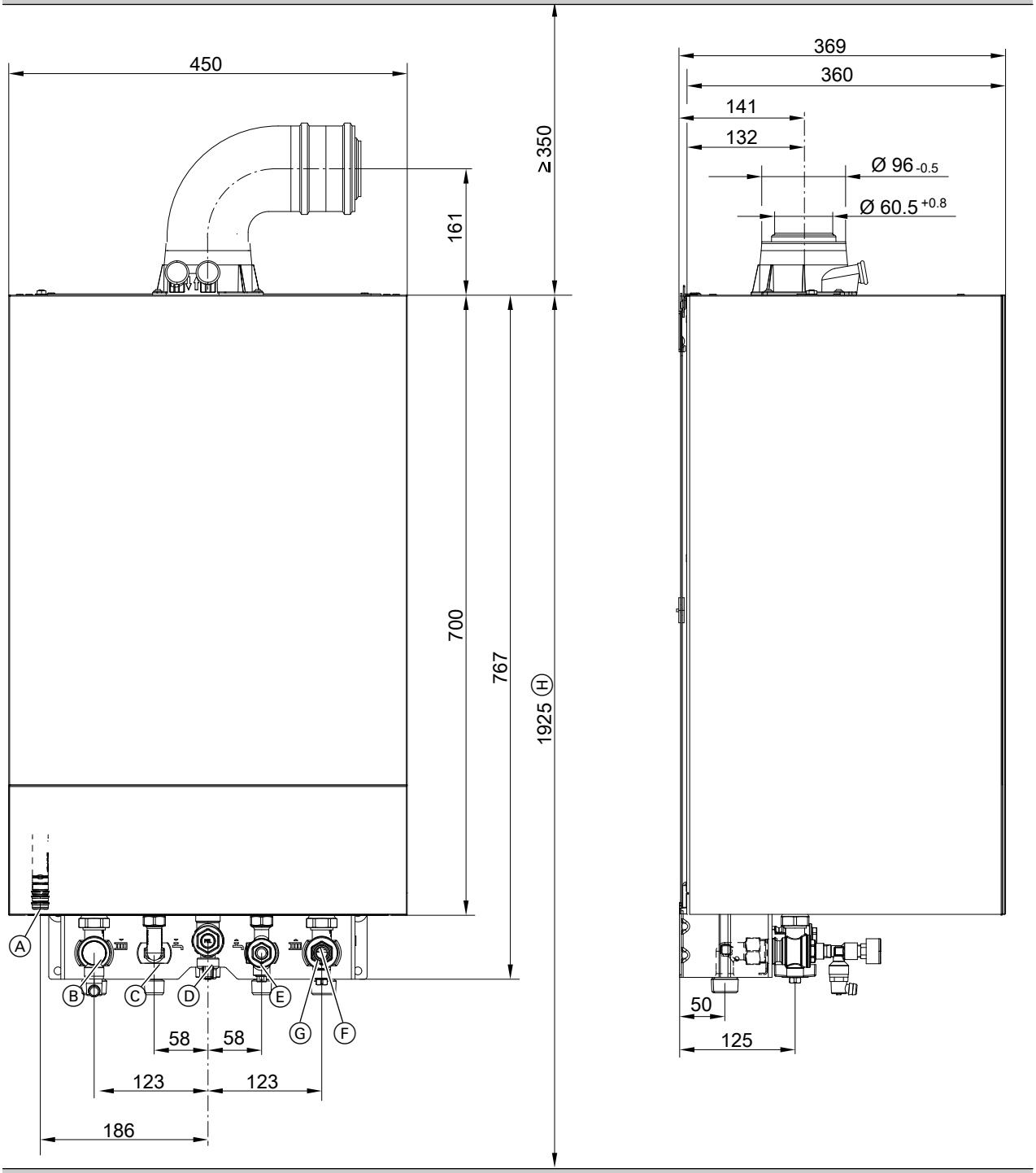

Fig. 2 Illustration shows a gas condensing combi boiler

Ⓐ Condensate drain
Ⓑ Heating flow
Ⓒ DHW (gas condensing combi boiler)
Cylinder flow (gas condensing system boiler)
Ⓓ Gas connection
Ⓔ Cold water (gas condensing combi boiler)
Cylinder return (gas condensing combi boiler)
Ⓕ Heating return
Ⓖ Filling/draining
Ⓗ Dimension for installation with DHW cylinder below the boiler

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Preparing for installation (cont.)

Note
This boiler (IP rating: IP X4) is approved for installation in wet rooms inside safety zone 1, to DIN VDE 0100. Exposure to jets of water must be prevented.
For open flue operation, the boiler may only be operated with a splash cover.
Observe the requirements of DIN VDE 0100.

1. Subject to order: Fit supplied pre-plumbing jig, mounting frame or wall mounting bracket in the relevant installation location.


Installation instructions for pre-plumbing jig or mounting frame

Note
Check the condition of the wall where the boiler is to be installed. For the suitability of the supplied rawl plugs for various building materials, see manufacturer's instructions: Fischer Spreizdübel SX 10 x 80
For other construction materials, use fixing materials with sufficient load bearing capacity.

2. Prepare the water connections to the valves/fittings of the mounting bracket.
Thoroughly flush the heating system.

! **Please note**
To prevent appliance damage, connect all pipework free of load and torque stress.

Note
To prevent dirt from entering the connections: Do not remove the protective caps until you are about to fit the boiler.

Note
If an on-site expansion vessel also has to be installed: Install this expansion vessel in the cylinder return, as the 3-way diverter valve is located in the heating flow.

3. Prepare the gas connection according to TRGI or TRF [or local regulations].

4. Prepare the electrical connections.
- The appliance is delivered fitted with a power cable (approx. 2 m long).
  Note
  Connect the power cable to the electricity supply using a fixed connection.
- Power supply: 230 V, 50 Hz, fuse rating max. 16 A
- Accessory cables: 0.75 mm^2 flexible PVC cable with required number of cores for external connections.

Preparing for installation (cont.)

Connection on the DHW side for gas condensing combi boiler

Cold water installation

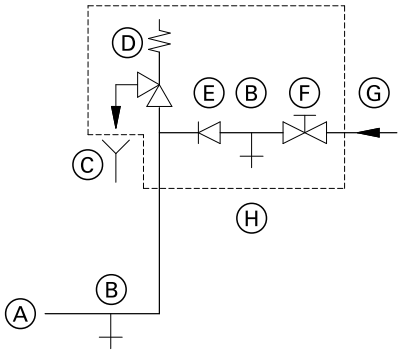

Fig. 3

Ⓐ Cold water connection of boiler
Ⓑ Drain outlet
Ⓒ Visible discharge pipe outlet point
Ⓓ Safety valve
Ⓔ Non-return valve
Ⓕ Shut-off valve
Ⓖ Cold water
Ⓗ Safety assembly

Safety assembly Ⓗ to DIN 1988 and EN 806 is required if it is possible that the mains water supply pressure will exceed 10 bar (1.0 MPa), and no DHW pressure reducing valve is installed (to DIN 4753).
Only use a non-return valve or a combined shut-off and non-return valve in conjunction with a safety valve.
If the safety valve is used, the cold water shut-off valve on the boiler must not be shut off.
Remove the toggle on the cold water shut-off valve (if installed) to prevent manual shut-off.

Shock arrestor

If draw-off points likely to cause water hammer are connected to the boiler's DHW network (e.g. flush valves, washing machines, dishwashers): Shock arrestors should be installed close to the cause of the water hammer.

Mounting the boiler and making connections

Removing the front panel

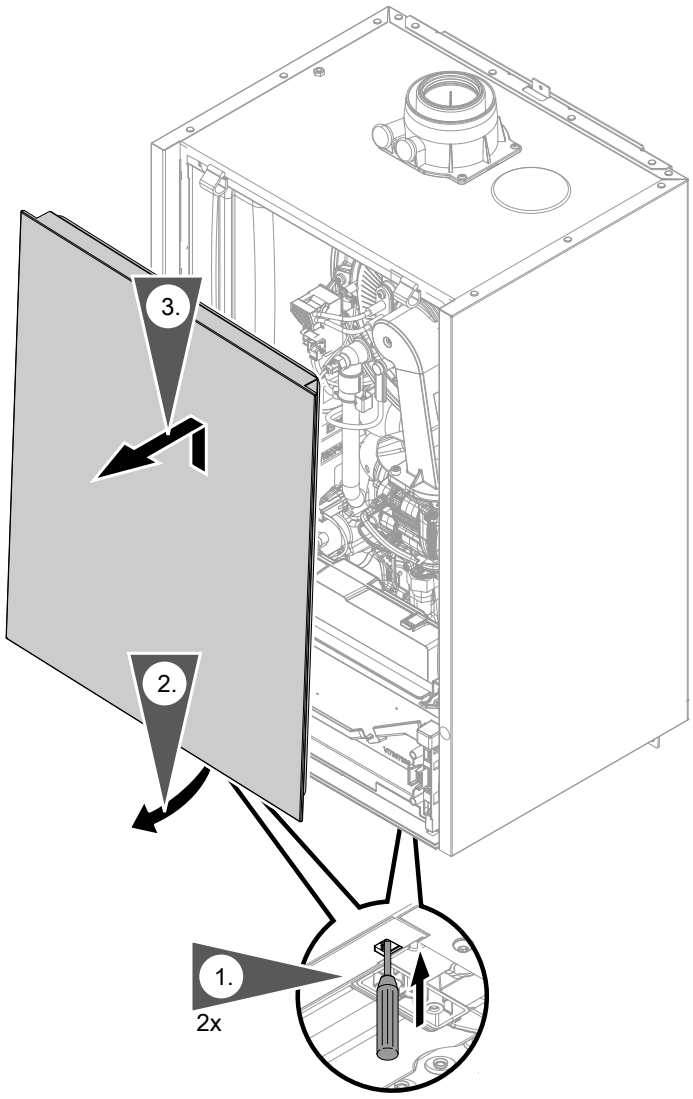

Fig. 4

1. Unlock the front panel on the underside (push in), using a screwdriver or similar tool.

2. Swivel the front panel forwards slightly and lift away upwards.

Note
Do not remove protective caps from connections on the heating water side and from the gas connection until you are about to commence installation.

Mounting the boiler on the pre-plumbing jig or mounting frame

Note
Various installation components can be found in a separate pack. Keep the installation components safe, as they will be required for later installation.

Mounting the boiler and making connections (cont.)

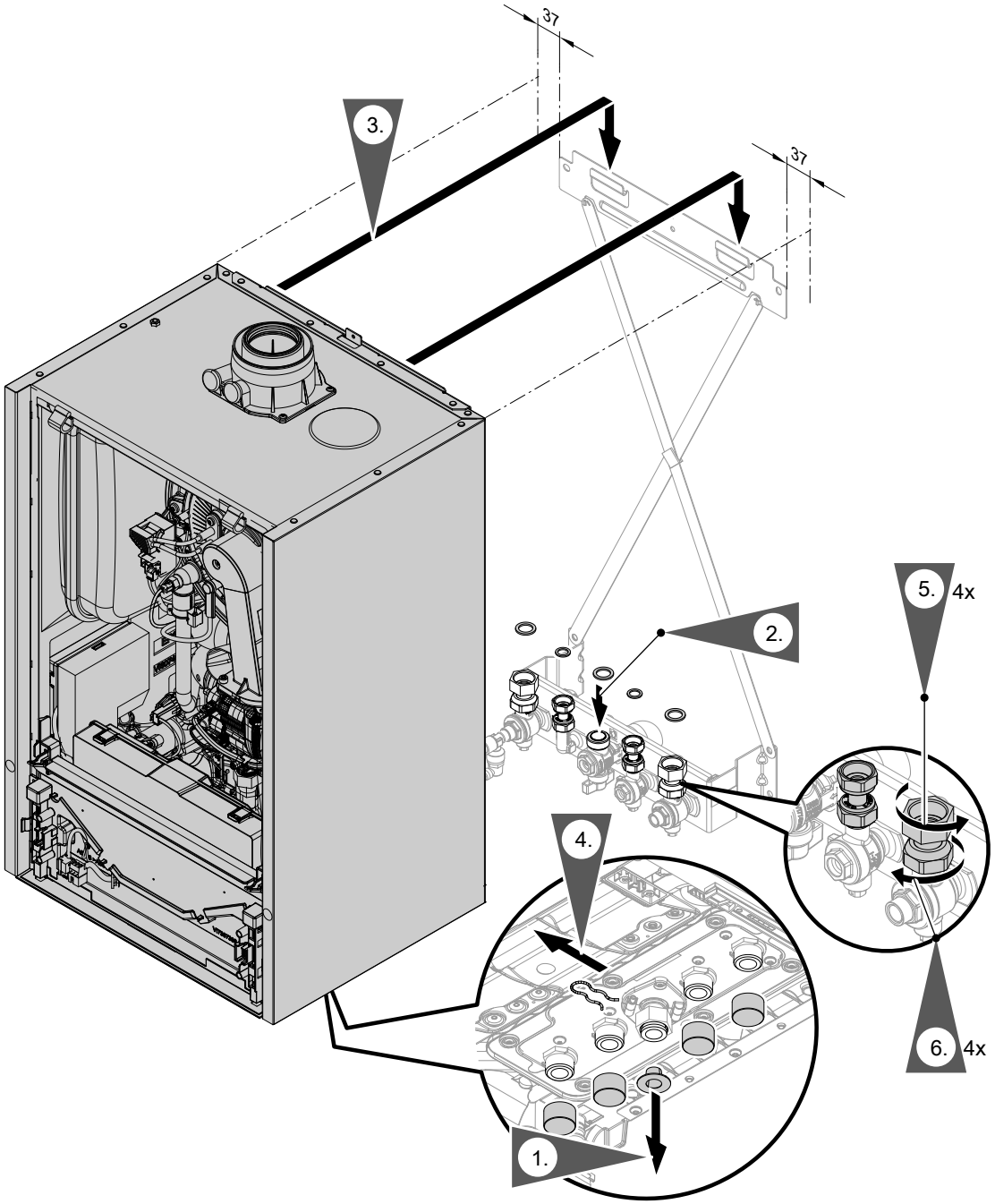

Fig. 5

Note
The diagram shows installation on a pre-plumbing jig for a gas condensing combi boiler.

The boiler can be installed on the following accessories:
- *Pre-plumbing jig*
- *Pre-plumbing jig for sub-mounting kit*
- *Mounting frame*
- *Self-supporting mounting frame*

1. Pull off the protective caps.

2. Replace gaskets.

Internal gasket diameter:
- Gas connection Ø 18.5 mm
- Connections on the heating water side Ø 17.0 mm

Note
Gasket for gas connection is attached to the gas shut-off valve.

3. Suspend the Vitodens from the wall mounting bracket.

Note
After mounting, ensure correct seating.

Mounting the boiler and making connections (cont.)

4. ***Note***
   Only remove the clip under the gas pipe union nut once the appliance has been installed. Clip is no longer required.

5. Tighten union nuts so that they form a tight seal.

   Torque settings:
   - Union nuts G ¾: 30 Nm
   - Union nuts G ½: 24 Nm

   When carrying out any work on gas connection fittings, counterhold with a suitable tool. Never transfer any forces to the internal components.

6. 6. Tighten locking ring fittings so that they form a tight seal.
   One turn beyond finger-tight.

Fitting the boiler to the wall mounting bracket

Note
Various installation components can be found in a separate pack. Keep the installation components safe, as they will be required for later installation.

Mounting the boiler and making connections (cont.)

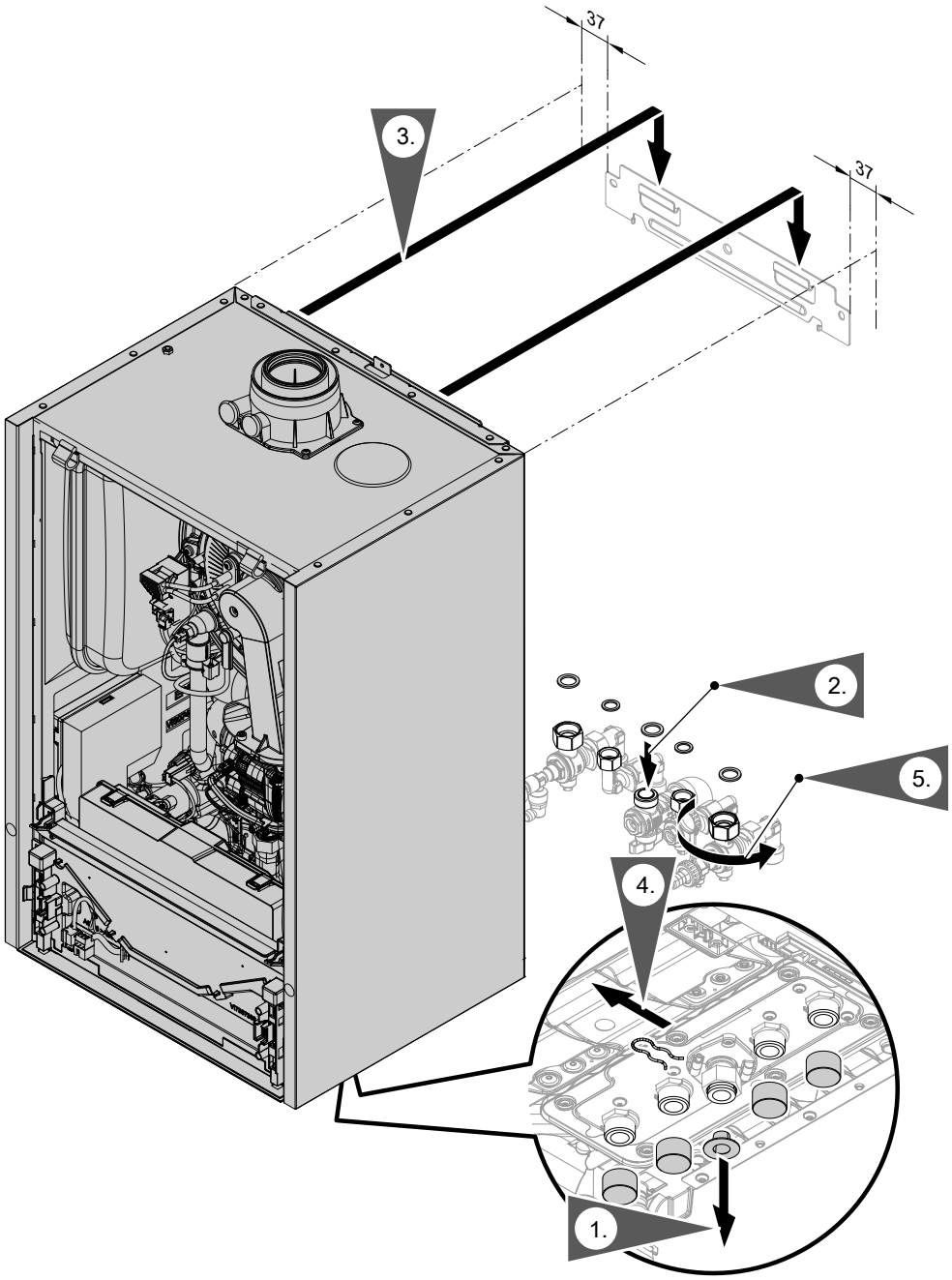

Fig. 6

1. Pull off the protective caps.

2. Replace gaskets. Fit valves and gas shut-off valve.

Internal gasket diameter:
- Gas connection Ø 18.5 mm
- Connections on the heating water side Ø 17.0 mm

Note
Gasket for gas connection is attached to the gas shut-off valve.

3. Suspend the Vitodens from the wall mounting bracket.

4. ***Note***
Only remove the clip under the gas pipe union nut once the appliance has been installed. Clip is no longer required.

5. Torque settings:
- Union nuts G ¾: 30 Nm
- Union nuts G ½: 24 Nm

When carrying out any work on gas connection fittings, counterhold with a suitable tool. Never transfer any forces to the internal components.

Mounting the boiler and making connections (cont.)

Fitting the programming unit mounting bracket on the top of the boiler

In the delivered condition, the programming unit is located on the underside of the boiler. If required for ease of operation, the programming unit can be located on the top of the boiler. To do so, reposition the bracket at the top.

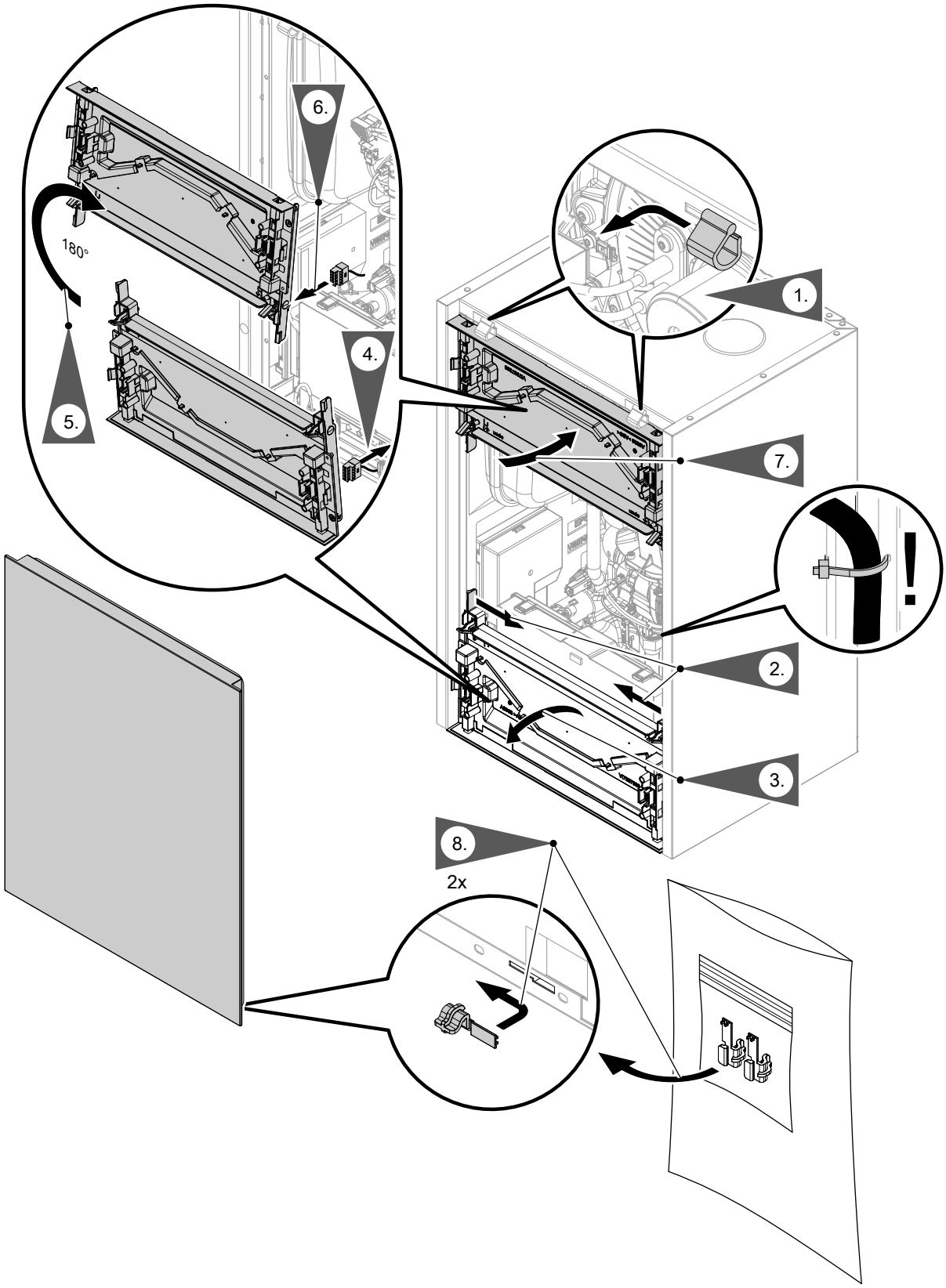

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Fig. 7

Mounting the boiler and making connections (cont.)

1. Remove the hinges and store them in case they need to be reinstalled at a later date.

4. Pull the plug of the connecting cable from the bracket.

> **!** **Please note**
> Incorrect routing of the cable can lead to heat damage and impairment of the EMC properties.
> Do not change the position of the cable or its fixture (fixing point on casing).

6. Turn the bracket over and insert the plug on the right-hand side again.

Connections on the heating water and DHW sides

If the connections have not been fitted previously, make the connections on the heating water and DHW sides.

Gas condensing system boiler

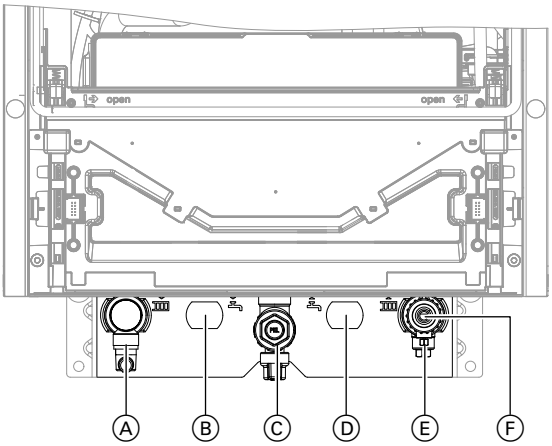

Fig. 8 Specifications for threads in conjunction with connection accessories

Ⓐ Heating flow R ¾ (male thread)
Ⓑ Cylinder flow G ¾
Ⓒ Gas connection R ¾
Ⓓ Cylinder return G ¾
Ⓔ Heating return R ¾ (male thread)
Ⓕ Filling/draining

Note
Intermediate pieces on the cylinder flow and return are parts of the connection set for the DHW cylinder.
If no DHW cylinder is being connected, seal off the connections with caps.

Gas condensing combi boiler

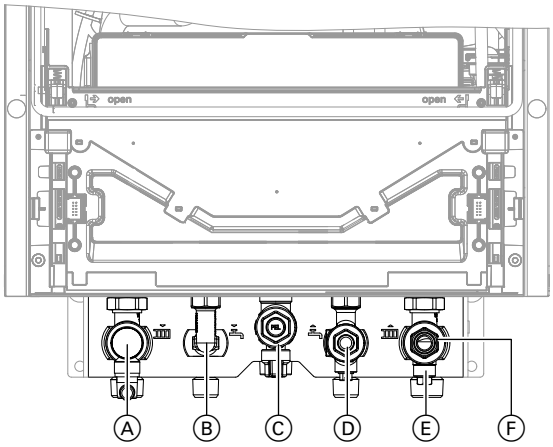

Fig. 9 Specifications for threads in conjunction with connection accessories

Ⓐ Heating flow R ¾ (male thread)
Ⓑ DHW G ½
Ⓒ Gas connection R ¾
Ⓓ Cold water G ½
Ⓔ Heating return R ¾ (male thread)
Ⓕ Filling/draining

Scald protection

DHW temperatures of over 60 °C can occur with gas condensing combi boilers. As a result, scald protection should be installed on site in the DHW pipe.

Condensate connection

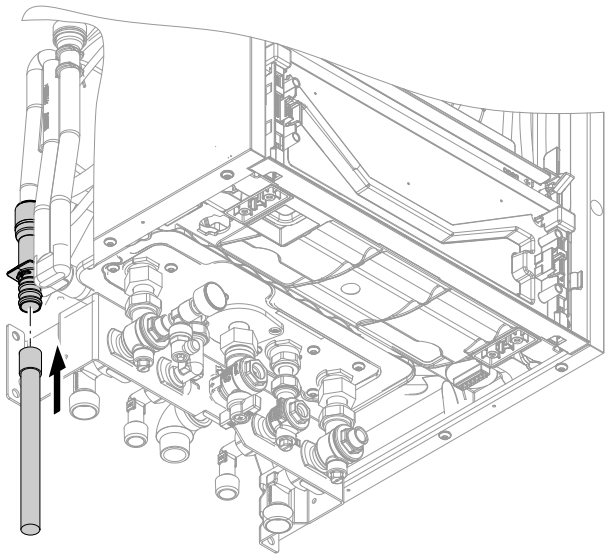

Fig. 10

1. Push the supplied drain hose on to the drain connector.

2. Connect the drain hose with a constant fall and a pipe vent to the public sewage system or to a neutralising system.

Note
Route the onward drain line inside the building as far as possible.

If the onward drain line is routed outside the building:
- *Use a min. Ø 30 mm line.*
- *Protect the line from frost.*
- *Keep the line as short as possible.*

Please note
The drain hose is used to route away any hot water discharged from the safety valve. Lay and secure the drain hose in a way that prevents any risk of scalding.

Note
Observe local waste water regulations.

Filling the trap with water

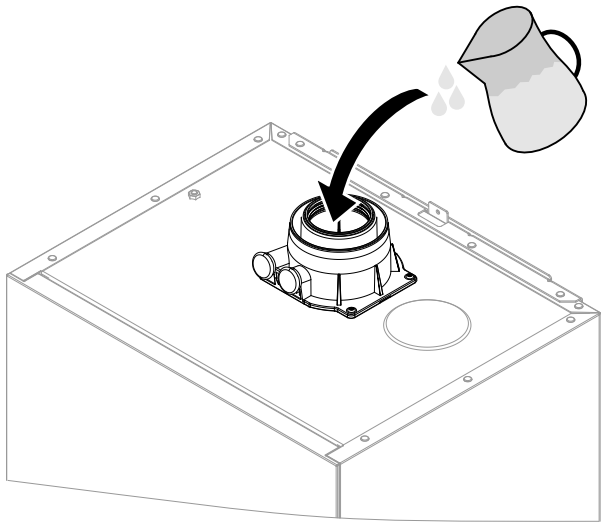

Fig. 11

Pour at least 0.3 l of water into the flue gas connection.

Please note
During commissioning, flue gas may escape from the condensate drain.
Always fill the trap with water before commissioning.

Note
If there is a risk of frost, only fill the trap just before commissioning.

Flue gas connection

Note
The "System certification" and "Skoberne GmbH flue system" labels enclosed with the technical documentation may only be used in conjunction with the Viessmann flue system made by Skoberne.

Connecting the balanced flue pipe
Flue system installation instructions

Flue gas connection (cont.)

Connecting several Vitodens to a shared flue system

If connecting several Vitodens to a shared flue system, install a back draught safety device in each boiler.

- Multiple vertical connections:
  Back draught safety device available as an accessory
- Flue gas cascade:
  Back draught safety device in standard delivery of flue gas cascade (accessories)

Installing the back draught safety device:


Installation instructions for back draught safety device

Converting the control unit for use with a shared flue system:

- In the commissioning assistant, select the **"Multiple connections"** setting under **"Flue system type"**.

Do not carry out **commissioning** until the following conditions are met:

- Free passage through the flue gas pipes.
- Flue system with positive pressure is gas-tight.
- Inspection port covers checked for secure and tight seating.
- Apertures for ensuring sufficient combustion air supply are open and cannot be closed off.
- Applicable regulations on installing and commissioning flue systems have been followed.


Danger
Leaking or blocked flue systems or an insufficient supply of combustion air cause life threatening poisoning due to carbon monoxide in the flue gas.
Ensure the flue system functions correctly. Apertures for combustion air supply must not be able to be closed off.
Prevent condensate drainage via a wind protector.

Gas connection

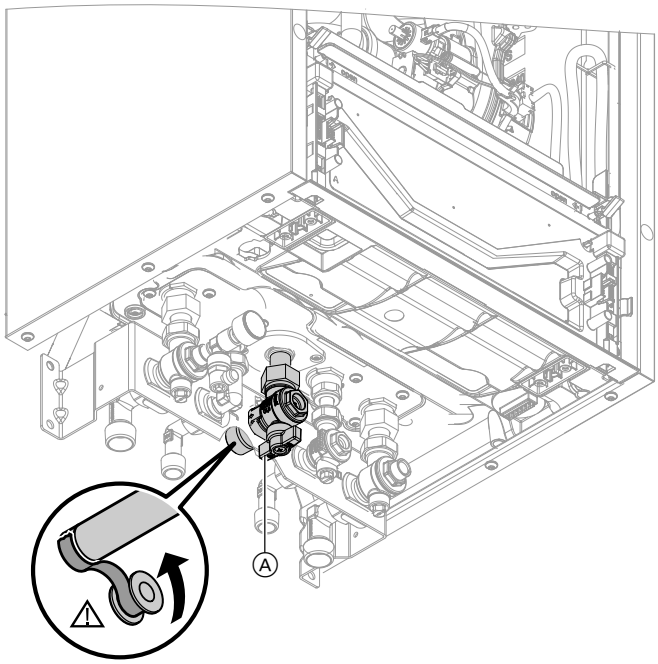

Fig. 12

1. If the gas connection has not been fitted previously, seal gas shut-off valve Ⓐ to the gas connection.
When carrying out any work on gas connection fittings, counterhold with a suitable tool. Never transfer any forces to the internal components.

Information on operation with LPG
Install an external safety solenoid valve if the boiler is installed below ground level.
An EM-EA1 extension (accessories) is required to connect the safety solenoid valve.

2. Check for leaks.

⚠ **Danger**
Escaping gas leads to a risk of explosion.
Check all connections on the gas side (also inside the appliance) for tightness.

Note
Only use suitable and approved leak detection agents (EN 14291) and devices for the tightness test. Leak detection agents with unsuitable constituents (e.g. nitrides, sulphides) can cause material damage.
Remove residues of the leak detection agent after testing.

! **Please note**
Excessive test pressure will damage the boiler and the gas train.
Max. test pressure 150 mbar (15 kPa).
Where higher pressure is required for tightness tests, disconnect the boiler and the gas train from the main supply pipe (undo the fitting).

3. Purge the gas line.

Electrical connections

Opening the wiring chamber

Note
If only PlusBus, the outside temperature sensor and the cylinder temperature sensor are connected to the heat generator, the wiring chamber does not need to be opened.

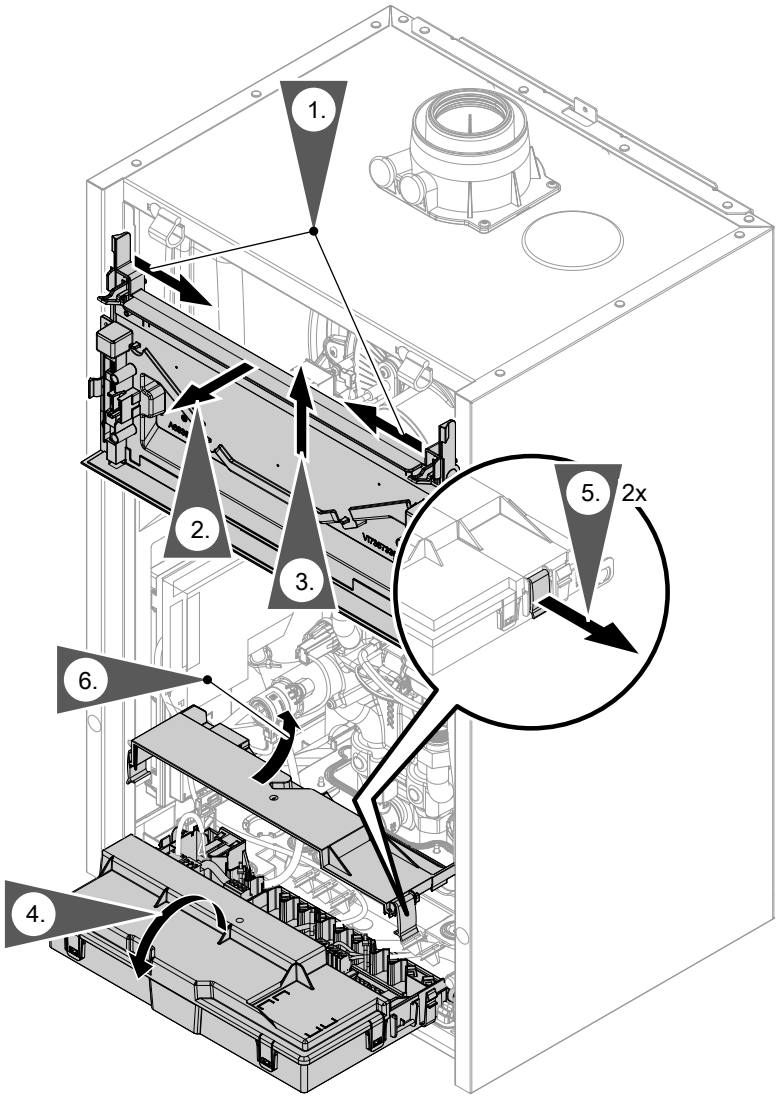

Fig. 13

Note
Steps 1 to 3 are required only if the programming unit is located at the bottom.
Do not disconnect the plug from the mounting panel.
Do not change the position of the cable or its fixture (fixing point on casing).

! **Please note**
Electronic assemblies can be damaged by electrostatic discharge.
Prior to commencing any work, touch earthed objects, such as heating or water pipes to discharge static loads.

Electrical connections (cont.)

Layout of the electrical connections

Note
For further information on the connections, see the following chapters.

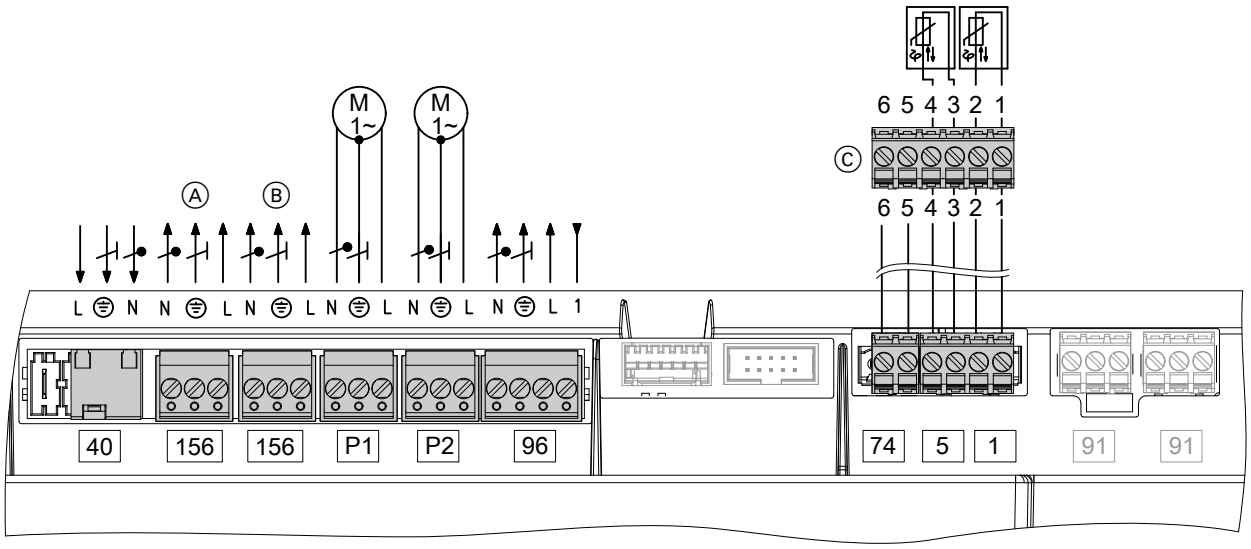

Fig. 14

Connections to 230 V~ plugs

- 40 Power supply
- 96 Configurable input 230 V, potential free
  Output 230 V
- 156 Switched power outlet
- P1 Output 230 V for:
  Circulation pump for cylinder heating or heating circuit pump for heating circuit without mixer
- P2 Output 230 V for:
  Heating circuit pump for heating circuit without mixer or DHW circulation pump
- Ⓐ BCU burner control unit power supply (connected in the delivered condition)
- Ⓑ Power supply for accessories
- Ⓒ External plug on underside of appliance (see diagram below)

Connections to extra low voltage (ELV) plugs

- 1 Outside temperature sensor
  Terminals 1 and 2 on external plug Ⓒ
- 5 Cylinder temperature sensor
  Terminals 3 and 4 on external plug Ⓒ
- 74 PlusBus
  Terminals 5 and 6 on external plug Ⓒ
- 91 CAN bus

Information on connecting accessories
When connecting accessories observe the separate installation instructions provided with them.

Electrical connections (cont.)

On-site connections on HMU heat management unit

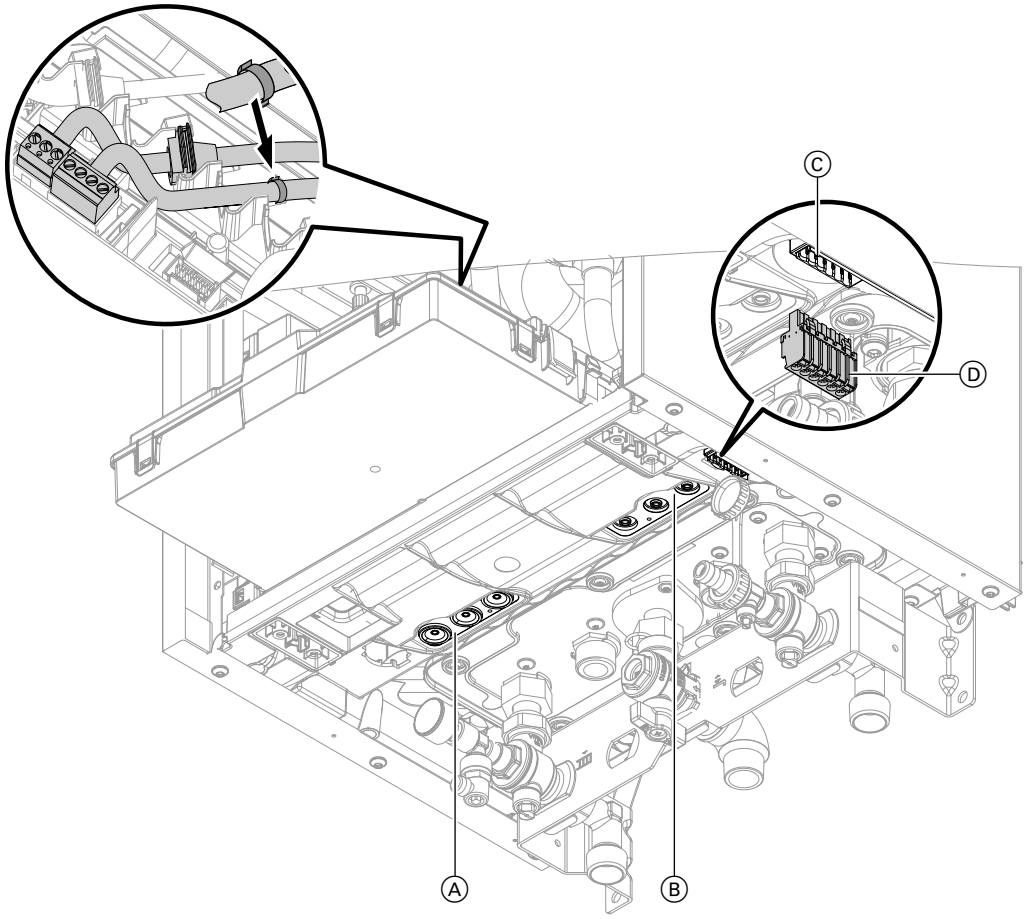

Fig. 15

Ⓐ Diaphragm grommets, 230 V cables
Ⓑ Diaphragm grommets, extra low voltage (ELV)
Ⓒ Plug-in connection on underside of appliance
Ⓓ Plug for connecting sensors and PlusBus
Remove plug from the pack of installation components.

- Open diaphragm grommets as required. Thread through only one cable at a time without a plug. Ensure diaphragm grommets are airtight. If required, remove plug from cable. After threading the cable through, re-fit the plug to the wire ferrules.
- Required plugs are supplied in separate packaging.
- For cables without strain relief bushings, provide strain relief in the wiring chamber in the form of cable ties.

Outside temperature sensor 1

Fitting location for outside temperature sensor

- North or north-westerly wall, 2 to 2.5 m above ground level; in multi storey buildings, in the upper half of the second floor
- Not above windows, doors or vents
- Not immediately below balconies or gutters
- Never render over

Outside temperature sensor connection

2-core lead, length up to 35 m with a cross-section of 1.5 mm^2

Electrical connections (cont.)

Connecting the cylinder temperature sensor

Connect the cylinder temperature sensor to terminals 3 and 4 on external plug Ⓒ. See page 21.

Remove existing plugs from the sensor and fit the wire ferrules.

Connecting the circulation pump to P1 and P2

Note
Observe the priority of the connections.

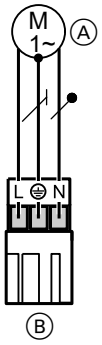

Fig. 16

Ⓐ Circulation pump
Ⓑ P1/P2 plug on HMU heat management unit

Possible connections to P1 and priority of connections:
1. Circulation pump for cylinder heating
2. If no circulation pump for cylinder heating is present:
   Heating circuit pump for heating circuit without mixer A1 in connection with low loss header and heating circuits with mixer

Possible connections to P2 and priority of connections:
1. Heating circuit pump for heating circuit without mixer A1 in connection with low loss header and heating circuits with mixer
2. If no circulation pump for heating circuit without mixer is present:
   DHW circulation pump
   Note
   If a heating circuit pump for heating circuit without mixer is installed, connect the DHW circulation pump to the P1 extension (accessories).
   Connect DHW circulation pumps with standalone functions directly to the 230 V~ supply.

The function of connections P1 and P2 is selected in the commissioning assistant by selecting the connected component.

Specification

Rated current	1 A
Rated voltage	230 V ~

Floating switching contact connection

Connection at plug 96

One of the following functions can be connected:
- External demand
- External blocking
- DHW circulation pump external demand (pushbutton function, pump runs for 5 min). Cannot be connected with Vitodens 222-W.
- Room temperature controller (room thermostat)
  For room temperature-dependent operating mode

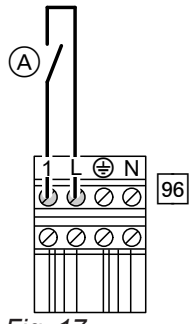

Fig. 17

Ⓐ Floating contact

Assigning functions in the commissioning assistant

See commissioning assistant in "Commissioning".

Electrical connections (cont.)

Information on connecting PlusBus subscribers

Only the following PlusBus subscribers can be connected to the control:
- 2 x EM-M1 or EM-MX extensions (ADIO electronics module)
- 2 Vitotrol 200-E
- 3 x EM-EA1 extensions (DIO electronics module)
- 1 x EM-S1 extension (ADIO or SDIO/SM1A electronics module)
- 1 x EM-P1 extension (ADIO electronics module)

The max. total length of the PlusBus lead is 50 m. With an unscreened lead, 2-core, 0.34 mm^2.

Checking the CAN bus terminator switch setting

The CAN bus resistor is switched using switch Ⓐ in the wiring chamber.

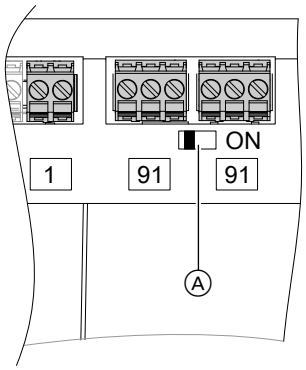

Fig. 18

- If the device is **not** integrated into a CAN bus system:
  Switch Ⓐ must **not** be set to "ON".
- If the device is integrated into a CAN bus system and is located at the beginning or end of this system (not in the middle) of the CAN bus system (connected to only one plug 91): Set switch Ⓐ to "ON".

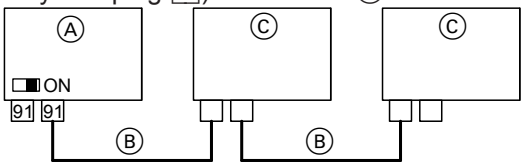

Fig. 19

- If the device is integrated into a CAN bus system and is **not** located at the beginning or end of the CAN bus system (both plugs 91 connected): Do **not** set switch Ⓐ to "ON".

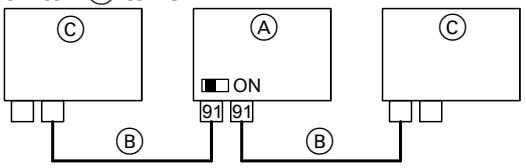

Fig. 20

Power supply for accessories at plug 96/156 (230 V ~)

When positioned in wet rooms, accessories outside the wet area must not be connected to the power supply at the HMU heat management unit. If the boiler is not sited in a wet room, the power supply for accessories can be connected directly to the HMU heat management unit. This connection is switched directly with the ON/OFF switch of the appliance.

If the total system current exceeds 6 A, connect one or more extensions directly to the mains supply via an ON/OFF switch (see next chapter).

Electrical connections (cont.)

Power supply and PlusBus connection of accessories

Power supply of all accessories at the HMU heat management unit

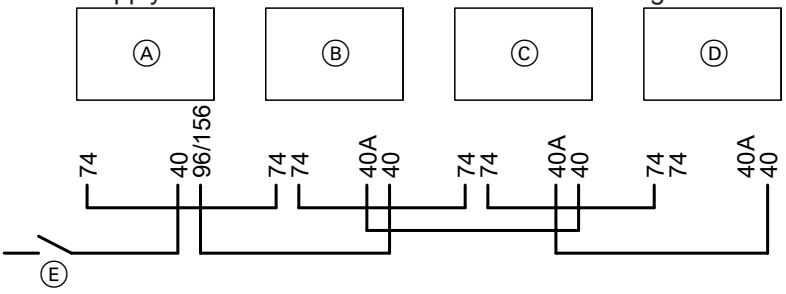

Fig. 21

Some accessories with direct power supply

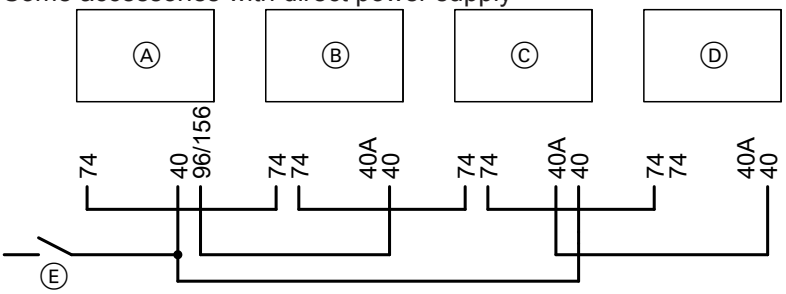

Fig. 22

Ⓐ HMU heat management unit, heat generator
Ⓑ Mixer extension kit (ADIO electronics module)
Ⓒ Mixer extension kit (ADIO electronics module)
Ⓓ EM-EA1 extension (DIO electronics module) and/or EM-S1 extension (ADIO or SDIO/ SM1A electronics module)
Ⓔ ON/OFF switch
40 Mains input
40A Power outlet
74 PlusBus
96/156 Power outlet on HMU heat management unit

PlusBus system length max. 50 m for 0.34 mm² cable cross-section and unshielded cable.
If the current flowing to the connected working parts (e.g. circulation pumps) is higher than the fuse rating of the relevant accessory, only use the output concerned to control an on-site relay.

Accessories	Internal fuse protection
EM-M1, EM-MX mixer extension kit	2 A
EM-EA1 extension	2 A
EM-S1 extension (not for Vitodens 222-F, 222-W and 333-F)	2 A

Danger
Incorrect wiring can lead to serious injury from electrical current and result in appliance damage.
- Route extra low voltage (ELV) leads < 42 V separately from cables > 42 V/230 V~.
- Only strip the minimum of insulation from cables as close as possible to the terminals and bundle tightly to the corresponding terminals.
- Secure cables with cable ties.

Electrical connections (cont.)

Power supply 40

Danger
Incorrectly executed electrical installations can result in injuries from electrical current and damage to the appliance.

Connect the power supply and implement all safety measures (e.g. RCD circuit) in accordance with the following regulations:
- IEC 60364-4-41
- VDE regulations
- Connection conditions of the local grid operator

- Install an isolator in the power cable to provide omnipolar separation from the mains for all active conductors, corresponding to overvoltage category III (3 mm) for complete isolation. The isolator must be fitted in the permanent electrical installation, in line with installation requirements.
  In addition we recommend the installation of an AC/DC-sensitive RCD (FI Class B ⏦ ⎓) for DC (fault) currents that can arise from energy efficient equipment.
- Connect the power cable to the electricity supply using a fixed connection.
- If the power supply to the appliance is connected with a flexible cable, ensure that the live conductors are pulled taut before the earth conductor in the event of strain relief failure. The length of the earth conductor wire will depend on the design.
- Max. fuse rating 16 A.

Danger
The absence of system component earthing can lead to serious injury from electric current if an electrical fault occurs.
The appliance and pipework must be connected to the equipotential bonding of the building.

Routing connecting cables/leads

Please note
If closures or diaphragm grommets are damaged, splashproofing is no longer ensured.
Never open or damage closures or unused diaphragm grommets on the underside of the appliance. Seal cable entries with fitted diaphragm grommets.

Electrical connections (cont.)

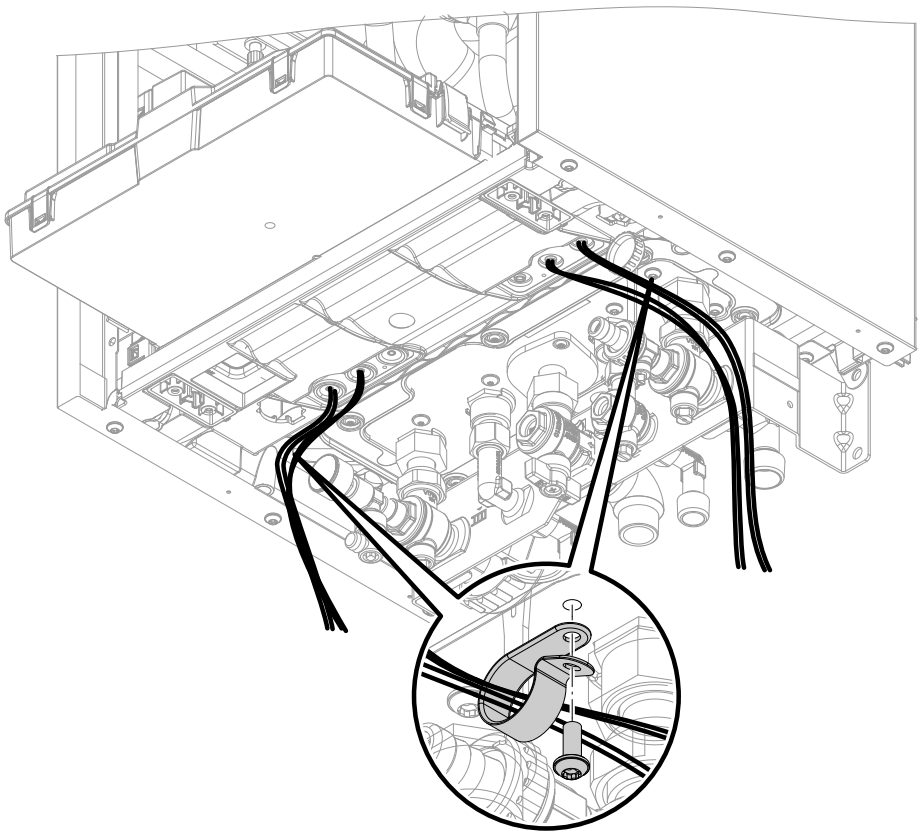

Fig. 23

Bundle cables using the supplied cable clips.
Route extra low voltage (ELV) leads < 42 V separately from cables > 42 V/230 V~.
Secure the cable clips on the underside using the supplied screws.
Do not route cables over sharp edges.

! **Please note**
If connecting cables/leads come into contact with hot components, they will be damaged.
When routing and securing cables/leads on site, ensure that the maximum permissible temperatures for these cables/leads are not exceeded.

WiFi operational reliability and system requirements

WiFi router system requirement

- WiFi router with activated WiFi:
  The WiFi router must be protected by a sufficiently secure WPA2 password.
  The WiFi router must always have the latest firmware update.
  Do not use unencrypted connections between the heat generator and the WiFi router.
- Internet connection with high availability:
  Flat rate (flat rate tariff **without** restriction on time or data volume)
- Dynamic IP addressing (DHCP, delivered condition) in the network (WiFi):
  Have this checked on site, and if required set up, by an IT expert **prior to** commissioning.
- Set routing and security parameters in the IP network (LAN):
  Enable port 80, port 123, port 443 and port 8883 for direct outward connections.
  Have this checked and, if necessary, set up on site by an IT expert **before** commissioning.

WiFi operational reliability and system… (cont.)

Wireless signal range of WiFi connection

The range of wireless signals may be reduced by walls, ceilings and interior fixtures. These weaken the wireless signal, causing poor reception due to the following circumstances.

- On their way between transmitter and receiver, wireless signals are **damped**, e.g. by air or when penetrating walls.
- Wireless signals are **reflected** by metallic objects e.g. reinforcements embedded in walls, metal foil of thermal insulation and thermal glazing with metallised thermal vapour deposit.
- Wireless signals are **isolated** by service ducts and lift shafts.
- Wireless signals are **disrupted** by devices that also operate with high frequency signals. Maintain a distance of **at least 2 m** from these devices:
  - Computers
  - Audio and video systems
  - Devices with active WiFi connection
  - Electronic transformers
  - Pre-ballasts

Install the heat generator as close as possible to the WiFi router to ensure a good WiFi connection. The signal strength can be displayed on the heat generator (see the operating instructions).

Note

The WiFi signal strength can be increased with commercially available WiFi repeaters.

Angle of penetration

The reception quality remains best if radio signals hit the walls vertically.
Depending on the angle of penetration, the effective wall thickness changes and so does the extent to which the electromagnetic waves are damped.

Flat (unfavourable) angle of penetration

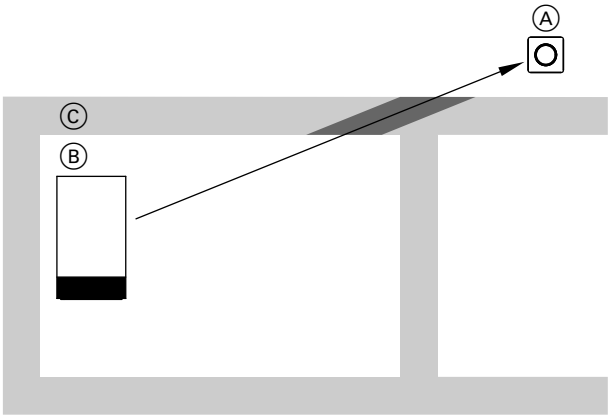

Fig. 24

Ⓐ WiFi router
Ⓑ Heat generator
Ⓒ Wall

Ideal angle of penetration

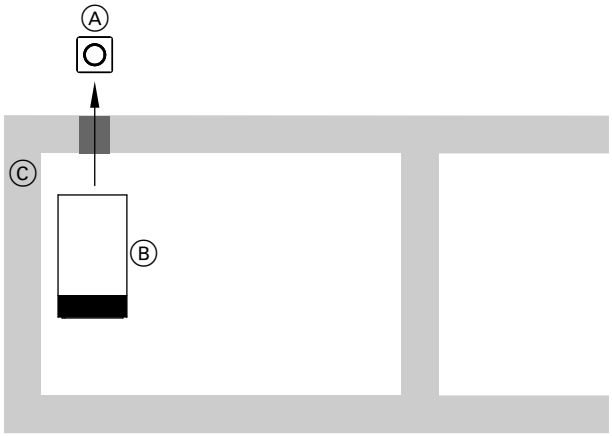

Fig. 25

Ⓐ WiFi router
Ⓑ Heat generator
Ⓒ Wall

Closing the wiring chamber

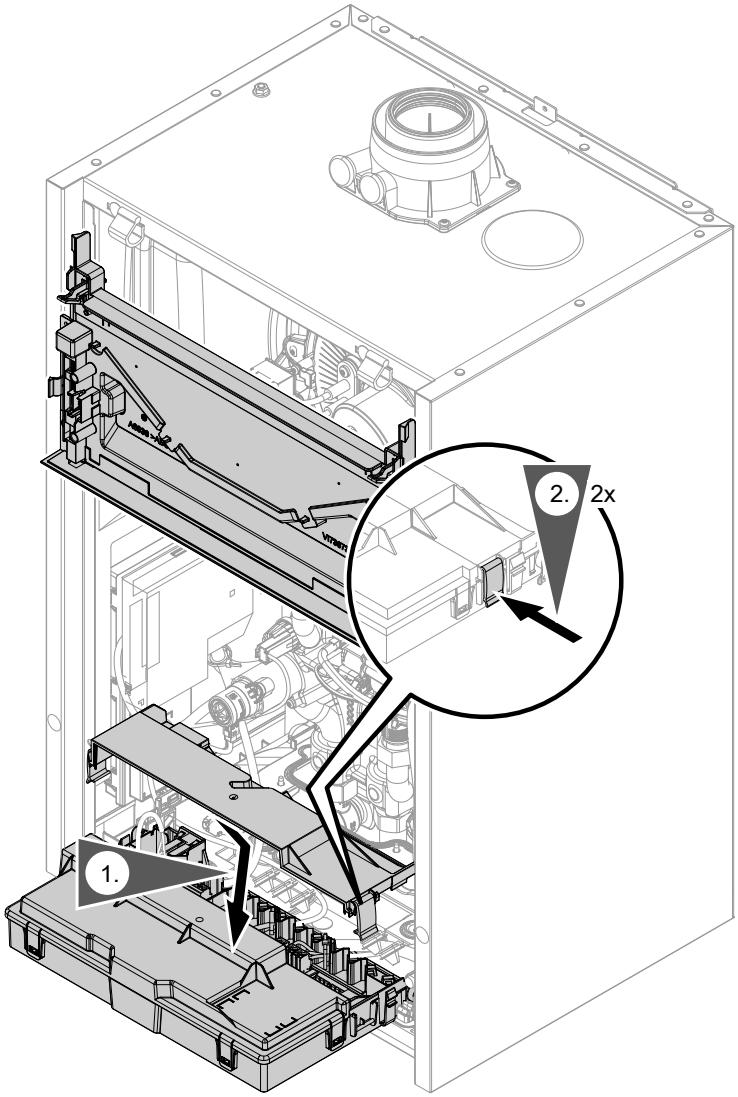

Fig. 26

Fitting the programming unit and front panel

Programming unit located at the bottom

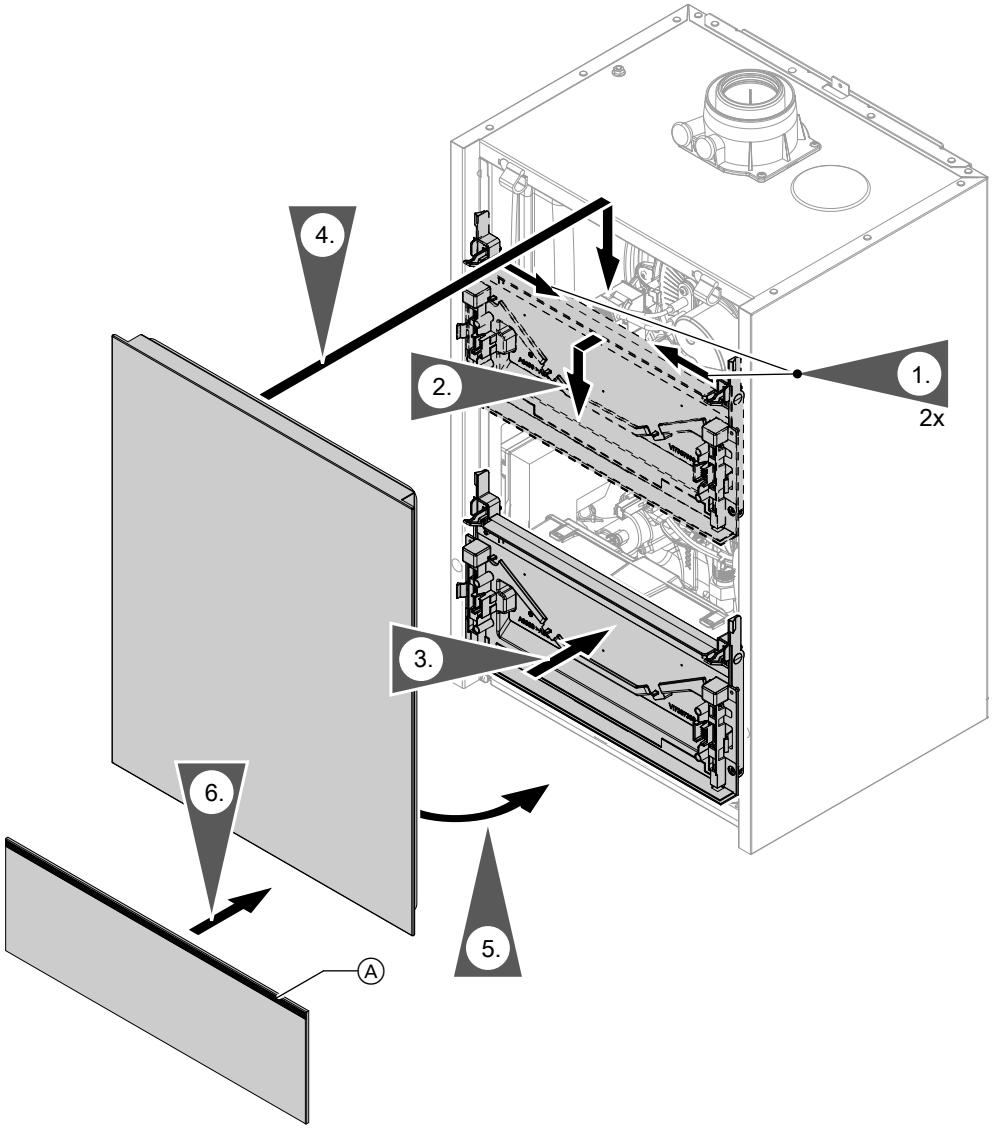

Fig. 27

Lightguide Ⓐ at the top

Fitting the programming unit and front panel (cont.)

Programming unit located at the top

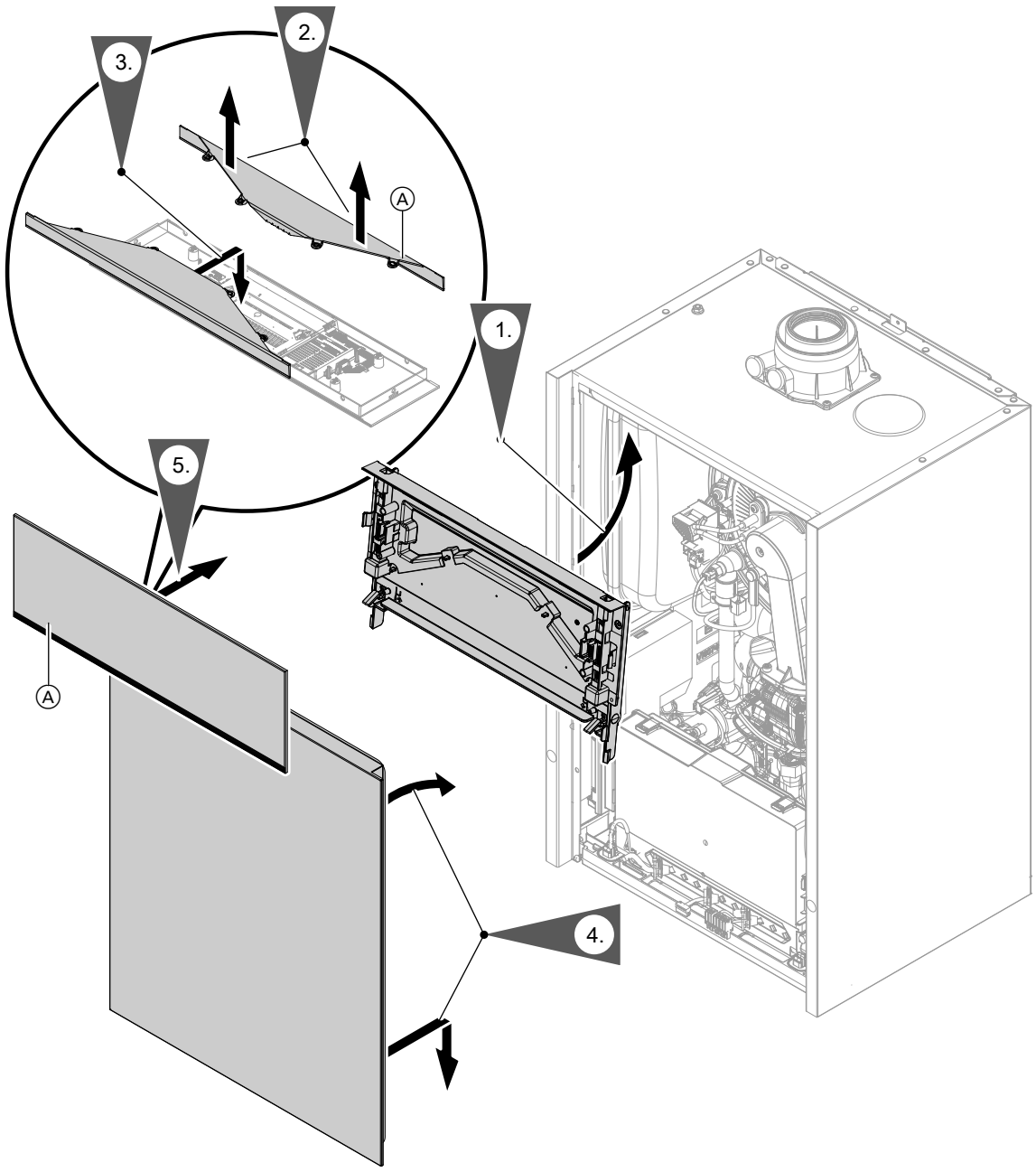

Fig. 28

1. Install the mounting panel for the programming unit at the top. See page 15.
   Reconnect the plugs to the mounting panel on the right. Do not alter where and how the cable is secured (fixing point of the cable tie).
2. Pull Lightguide Ⓐ out of all 4 detents at once and remove. As you do so, pull it upwards between 2 detents, in the middle and at the same time.
   Ensure that the locking tabs do not break off.
3. Turn Lightguide Ⓐ around and clip it into place at the bottom of the programming unit.
4. Fit the front panel.
5. Fit the programming unit with Lightguide Ⓐ at the bottom.

Steps - commissioning, inspection and maintenance

Commissioning steps
Inspection steps
Maintenance steps

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Commissioning the system with the commissioning assistant

Please note
Only commission the appliance with a fully filled trap.
Check that the trap has been filled with water.

Commissioning assistant

1. Open the gas shut-off valve.
2. ▪ If the device has not been switched on yet: Switch the ON/OFF switch to ON. The commissioning assistant starts automatically.
   ▪ If the device has already been switched on: See chapter "Calling up the commissioning assistant at a later point".
3. Commission the heat generator and follow the commissioning assistant. See the overview below.

   Note
   Once the commissioning assistant has finished, run an actuator test to check that the actuators are connected correctly and working properly.

Commissioning assistant sequence	Explanations and references
Commissioning	
Language	
By app	The device automatically switches on the WiFi Access Point. Further commissioning steps according to the instructions of the software tool used (e.g. "ViStart app") ***Note*** *Apps for commissioning and service are available for iOS and Android devices.* Download on the App Store GET IT ON Google Play
By programming unit	If commissioning is to be carried out at the programming unit of the heat generator.
Trade fair mode ▪ Off ▪ On	Only for demonstration purposes. Do not select for normal heating mode.
Units ▪ Temperature ▪ Length ▪ Pressure	Select the required units of measurement (e.g. °C or °F)
Date ▪ Format	
Time ▪ Format ▪ Time changeover	

Commissioning the system with the commissioning… (cont.)

Commissioning assistant sequence	Explanations and references
Filling and venting ▪ Filling ▪ Venting	See chapters "Filling the heating system" and "Venting the heating system".
Gas type	If operating with LPG, switch to **"LPG"**
Flue system	
▪ Single connection	Only **one** heat generator is connected to the flue system (factory setting).
▪ Multiple connections	**Several** heat generators are connected to the flue system.
After confirmation with **OK**, an automatic test of the flue gas temperature sensor is carried out. See the following chapter.	
Building type	
▪ Detached house	One shared holiday program and time program for DHW heating
▪ Apartment building	Holiday program and time program for DHW heating can be set separately
Continue in the commissioning assistant with Yes or end commissioning with No.	
Operating mode	
▪ Weather-compensated	The outside temperature sensor must be connected
▪ Constant mode	Operation with constant flow temperature
▪ Room temperature-dependent	A room temperature controller/room thermostat (accessories) must be connected to plug 96. Only one heating circuit without mixer in the system.
System scheme	
Heating circuit 1	Heating circuit without mixer
Heating circuit 2, 3	Heating circuits with mixer
DHW	Settings for DHW heating according to the system components
▪ Not installed	System without DHW heating
▪ Cylinder with one sensor	System with DHW cylinder with 1 cylinder temperature sensor
▪ Cylinder with one sensor and DHW circulation pump	System with DHW cylinder with 1 DHW cylinder temperature sensor and DHW circulation pump
▪ DHW comfort function	Only for gas condensing combi boilers (cannot be changed)
▪ Loading cylinder with one sensor	Gas condensing storage combi boiler with integral loading cylinder
▪ Loading cylinder with one sensor and DHW circulation pump	Gas condensing storage combi boiler with integral loading cylinder and DHW circulation pump
▪ Loading cylinder with two sensors	Gas condensing storage combi boiler or gas/solar condensing storage combi boiler with integral loading cylinder
▪ Loading cylinder with two sensors and DHW circulation pump	Gas condensing storage combi boiler or gas/solar condensing storage combi boiler with integral loading cylinder and DHW circulation pump
Low loss header/buffer cylinder	Settings for the consumer circuits according to the system components
▪ Not installed	There is no low loss header or heating water buffer cylinder in the system.
▪ Low loss header, heating only	System with low loss header, without DHW heating
▪ DHW heating upstream of low loss header	DHW heating with e.g. separate DHW cylinder connected upstream of the low loss header
▪ DHW heating downstream of low loss header	DHW heating with e.g. separate DHW cylinder connected downstream of the low loss header

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Commissioning the system with the commissioning… (cont.)

Commissioning assistant sequence	Explanations and references
▪ Buffer cylinder, heating only	System with heating water buffer cylinder, without DHW heating
▪ DHW heating upstream of buffer cylinder	DHW heating with e.g. separate DHW cylinder connected upstream of the heating water buffer cylinder
▪ DHW heating downstream of buffer cylinder	DHW heating with e.g. separate DHW cylinder connected downstream of the heating water buffer cylinder
Solar	Solar thermal system connected to heat generator via EM-S1 extension (ADIO, SDIO/SM1A electronics module) Setting subject to the design of the solar thermal system EM-S1 extension installation and service instructions
▪ No solar function ▪ With DHW heating	
▪ With central heating backup	Only adjustable for SDIO/SM1A electronics module (not for Vitodens 242-F)
▪ With 2nd cylinder pre-heating	Only adjustable for SDIO/SM1A electronics module (not for Vitodens 242-F)
▪ With thermostat function	Only adjustable for SDIO/SM1A electronics module (not for Vitodens 242-F)
Plug 96 function	Function selection if a contact has been connected to plug 96 of the HMU heat management unit
▪ No function	
▪ External demand, DHW circulation pump	Pushbutton function, DHW circulation pump runs for 5 min.
▪ External demand	Heat generator demand with adjustable set flow temperature (parameter 528.0) and set primary circuit pump speed (parameter 1100.2)
▪ External blocking	
▪ Thermostat function	If a room temperature controller/room thermostat is connected in room temperature-dependent operating mode
EM-EA1 function	If an EM-EA1 extension (DIO electronics module) is connected as a function extension Selection of the connected function according to the table in the installation instructions for the EM-EA1 extension
Remote control unit	Set the type of remote control and subscriber no. as assignment to the respective heating circuit. Up to 3 heating circuits can be assigned to one remote control unit. It is not possible for several remote control units to act on one heating circuit.
The system carries out a restart.	

Automatic flue gas sensor check

The display shows: **"Testing, flue gas temperature sensor"** and **"Enabled, please wait ..."**.
If the flue gas temperature sensor is not positioned correctly, fault message F.416 appears on the display. For further details regarding the flue gas temperature sensor test, see "Repairs".
If fault message F.416 appears, reposition the flue gas temperature sensor in the flue gas connection. Check for leaks on the flue gas side.

Note
The burner remains blocked until the test has been passed.

When the fault has been remedied, turn the ON/OFF switch off and back on again.
Confirm the message with **OK**.

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Commissioning the system with the commissioning… (cont.)

Switching WiFi ON/OFF

The system can be remotely controlled via the internet using an app. To do this, establish a connection to the router.
Activating the internet connection:

Operating instructions

Labels with the credentials required for commissioning are attached to the programming unit.
Affix one of the labels with the credentials here so that you can find it again when you need it:

Fig. 29

Affix a further credentials label to the place marked on the type plate.

Calling up the commissioning assistant at a later point

If you need to continue commissioning later, the commissioning assistant can be reactivated at any time.

Tap the following buttons:

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. Use ∧/∨ to select **"Basic settings"**.
3. **OK**
4. Use ∧/∨ to select **"Commissioning assistant"**.
5. **OK**

Filling the heating system

Fill water

According to EN 1717 with DIN 1988-100, as a heat transfer medium for DHW heating, the heating water must meet fluid category ≤ 3. This requirement is met if water of potable quality is used as heating water. For example, if additives are used, the additive manufacturer must specify which category the treated heating water comes under.

Please note
Unsuitable fill water increases the level of deposits and corrosion and may lead to appliance damage.
- Flush the heating system thoroughly before filling.
- Only use fill water of potable water quality.
- Special antifreeze suitable for heating systems can be added to the fill water. The antifreeze manufacturer must verify its suitability.
- Fill and top-up water with a water hardness in excess of the following values must be softened, e.g. with a small softening system for heating water.

Total permissible hardness of the fill and top-up water

Total heating output	Specific system volume		
kW	**< 20 l/kW**	**≥ 20 l/kW to < 50 l/kW**	**≥ 50 l/kW**
≤ 50	≤ 3.0 mol/m³ (16.8 °dH)	≤ 2.0 mol/m³ (11.2 °dH)	< 0.02 mol/m³ (0.11 °dH)
> 50 to ≤ 200	≤ 2.0 mol/m³ (11.2 °dH)	≤ 1.5 mol/m³ (8.4 °dH)	< 0.02 mol/m³ (0.11 °dH)
> 200 to ≤ 600	≤ 1.5 mol/m³ (8.4 °dH)	≤ 0.02 mol/m³ (0.11 °dH)	< 0.02 mol/m³ (0.11 °dH)
> 600	< 0.02 mol/m³ (0.11 °dH)	< 0.02 mol/m³ (0.11 °dH)	< 0.02 mol/m³ (0.11 °dH)

Filling the heating system (cont.)

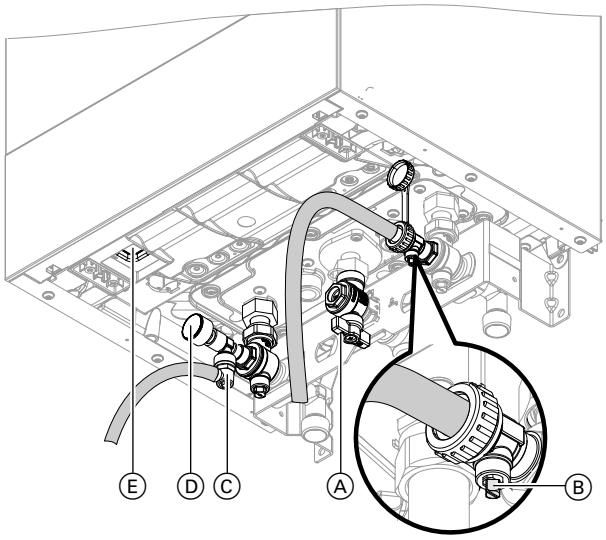

Fig. 30

Ⓔ ON/OFF switch

1. Check the pre-charge pressure of the expansion vessel.
2. Close gas shut-off valve Ⓐ.
3. Activate the filling function (see commissioning assistant or following chapter).
4. Fill the heating system at boiler drain & fill valve Ⓑ in the heating return (on the connection set or on site). Minimum system pressure > 1.0 bar (0.1 MPa). Check the system pressure at pressure gauge Ⓓ. The indicator must be in the green band. If necessary, open the on-site air vent valves.

   Note
   Ensure that the safety valve does not respond when you are filling the system. If the flow rate through the safety valve becomes too high, water may enter the combustion chamber.

5. Fit hose to air vent valve Ⓒ. Route the hose into a suitable container or drain outlet.
6. Close the shut-off valves on the heating water side.
7. Open air vent valve Ⓒ and fill valve Ⓑ in the heating return. Vent (flush) under mains pressure until no more air noise is audible.
8. Close air vent valve Ⓒ and boiler drain & fill valve Ⓑ.
   Check the system pressure at pressure gauge Ⓓ. The indicator must be in the green band.
9. Open the shut-off valves on the heating water side.

Activating the filling function

If the filling function is to be activated after commissioning.

Tap the following buttons:

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. Use ∧/∨ to select **"Basic settings"**.
3. **OK**
4. Use ∧/∨ to select **"Commissioning assistant"**.
5. **OK**
6. ∧/∨ for **"Next"** and **OK** until **"Filling"** appears.
7. **OK**
   The filling function is activated. The display shows the system pressure.
   The filling function ends automatically after 20 min or when you tap **OK**.

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Topping up the heating water

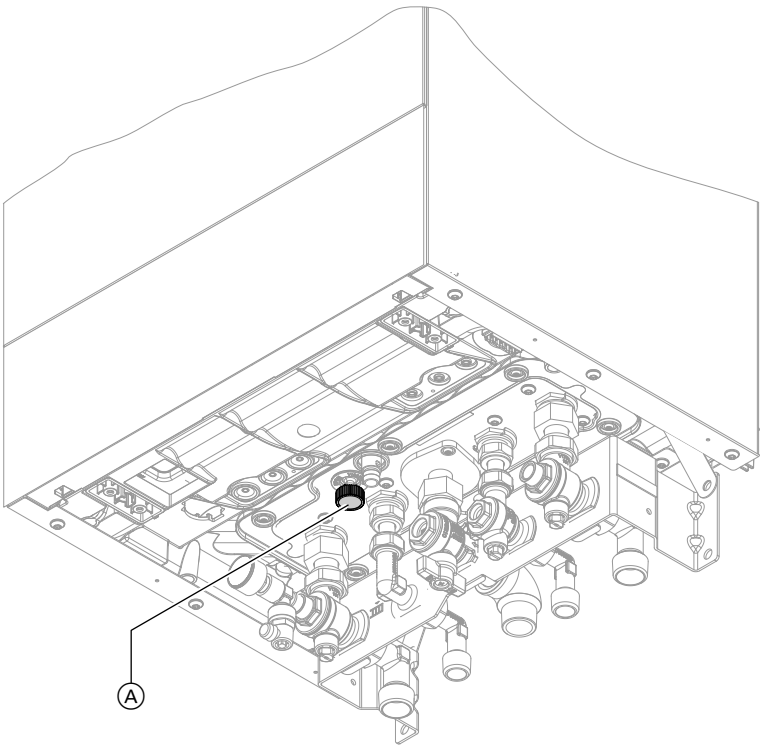

Fig. 31

For gas condensing combi boilers only: If necessary, top up the heating water at top-up valve Ⓐ.

Checking all connections on the heating water and DHW sides for leaks

Danger
Risk of electric shock from escaping heating water or DHW.
When commissioning and after carrying out maintenance work, check all water side connections for leaks.

Venting the heating system

1. Close the gas shut-off valve and switch the appliance ON.
2. Activate the venting program (see commissioning assistant or following chapter).
3. Adjust the system pressure.
   The display shows the system pressure.
4. Disconnect the supply hose from the boiler drain & fill valve.
5. Open the gas shut-off valve.

Activating the venting function

If the venting function is to be activated after commissioning.

Tap the following buttons:

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. Use ∧/∨ to select **"Basic settings"**.

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Venting the heating system (cont.)

3. **OK**
4. Use ∧/∨ to select **"Commissioning assistant"**.
5. **OK**
6. ∧/∨ for **"Next"** and **OK** until **"Venting"** appears.
7. **OK**
   The venting function is activated. The display shows the system pressure.
   The venting function ends automatically after 20 min or when you tap **OK**.

Checking the gas type

The boiler is equipped with an electronic combustion controller that adjusts the burner for optimum combustion in accordance with the prevailing gas quality.

- For operation with natural gas, no adjustment is therefore required across the entire Wobbe index range. The boiler can be operated within the Wobbe index range 9.5 to 15.2 kWh/m³ (34.2 to 54.7 MJ/m³).
- For operation with LPG or natural gas M, the gas type needs to be changed on the control unit (see following chapter).

1. Determine the gas type and Wobbe index by asking your local gas supply utility or LPG supplier.
2. Record the gas type in the service report.

Converting the gas type for operation with LPG and natural gas M

1. To change the gas type on the control unit, see "Commissioning the system with the commissioning assistant"

   Note
   Mechanical conversion on the gas train is not possible.

2. Affix label "G31" (supplied with the technical documentation) adjacent to the type plate on the cover panel.

Removing the front panel

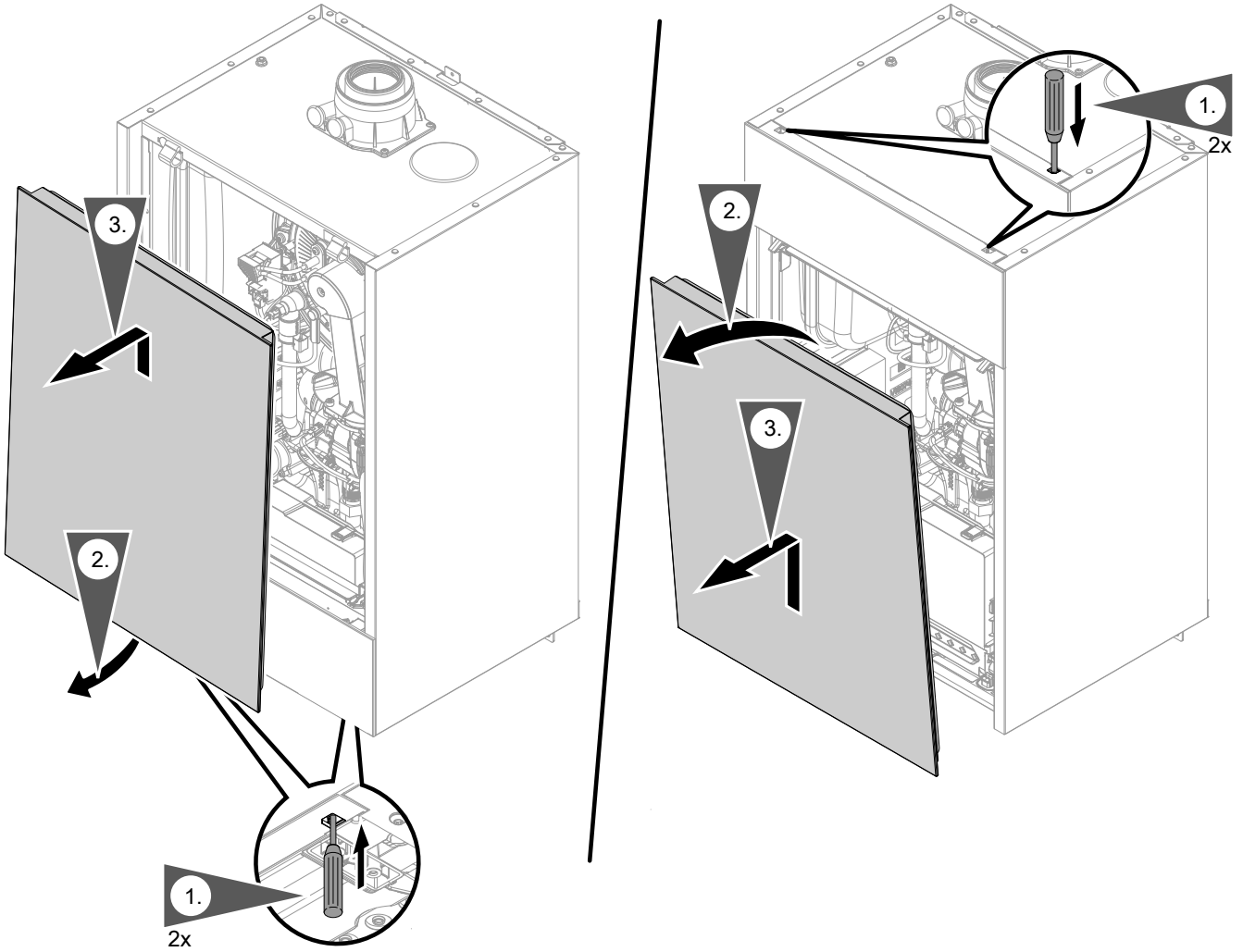

Fig. 32

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Moving the programming unit to the service position

To facilitate certain maintenance tasks, move the programming unit up or down, depending where it is located.

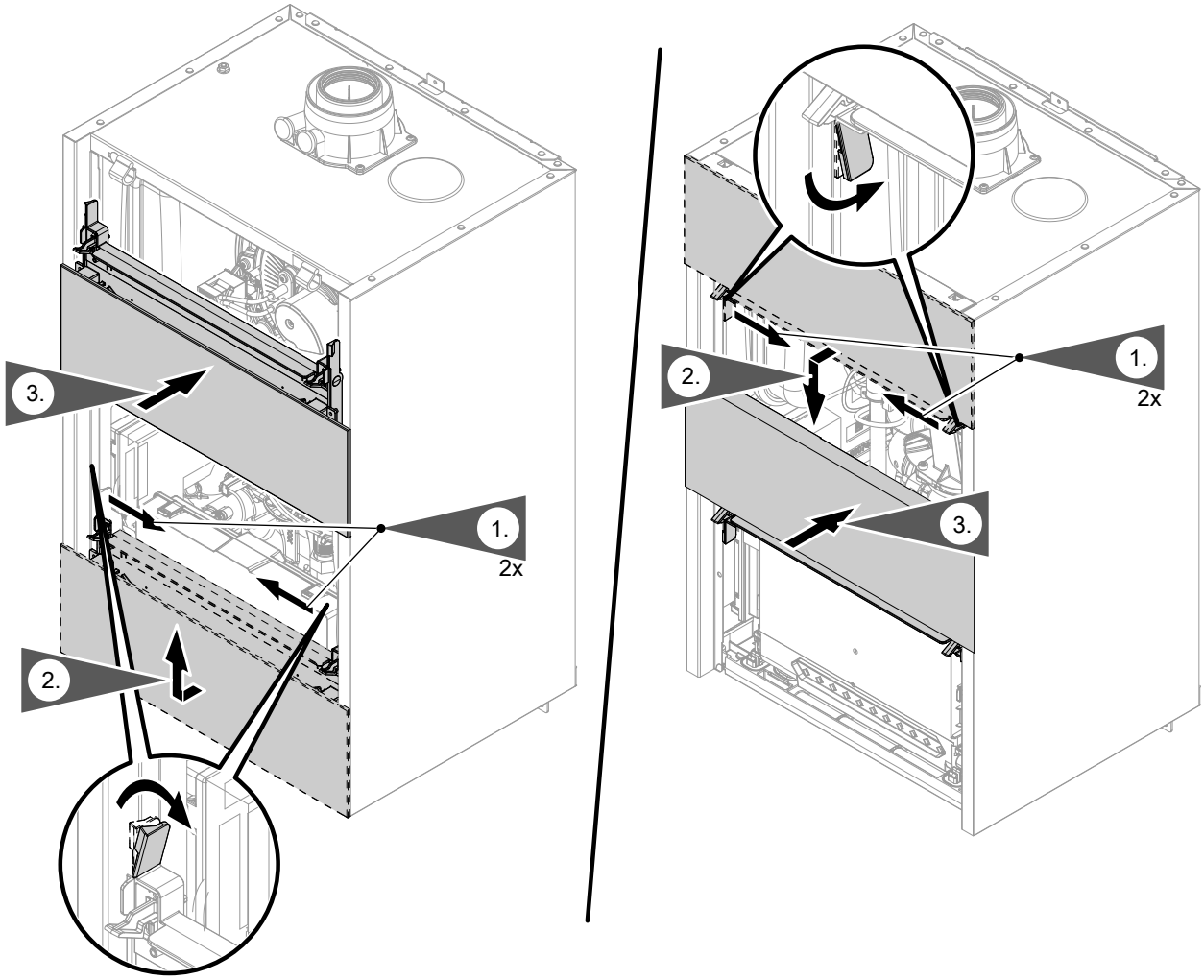


Fig. 33

Do not disconnect the plug from the mounting panel.
Do not alter where and how the cable is secured (fixing point of the cable tie).

Checking the static pressure and supply pressure

Danger
CO formation as a result of incorrect burner adjustment can have serious health implications. Always carry out a CO test before and after work on gas appliances.

Operation with LPG
Purge the LPG tank twice on commissioning/replacement. Vent the tank and gas connection line thoroughly after purging.

Checking the static pressure and supply pressure (cont.)

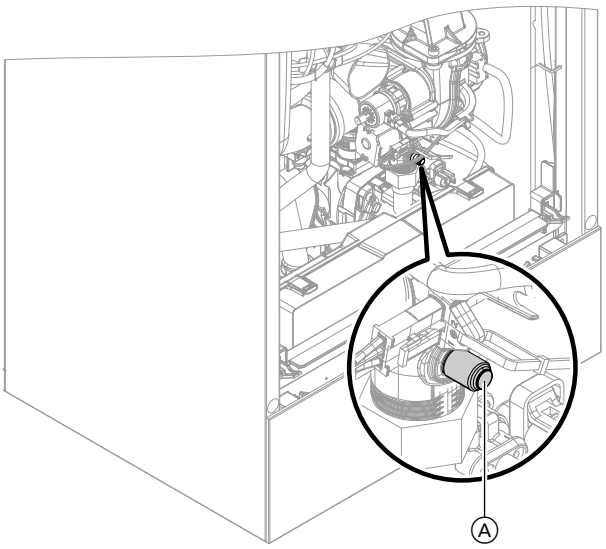


Fig. 34

1. Turn off the ON/OFF switch.
2. Close the gas shut-off valve.
3. Undo screw Ⓐ inside test connector on the gas train, but do not remove it. Connect the pressure gauge.
4. Open the gas shut-off valve.
5. Test the static pressure and record it in the report. Set value: Max. 57.5 mbar (5.75 kPa).
6. Turn on the ON/OFF switch and start the boiler.

   Note
   During commissioning, the appliance can enter a fault state if there are airlocks in the gas line. Reset the appliance after approx. 5 s (see operating instructions).

7. Check the supply (flow) pressure. For set values, see the following table.

   Note
   Use a suitable measuring device with a resolution of at least 0.1 mbar (0.01 kPa) to check the supply pressure.

8. Record the actual value in the report. Implement measures as indicated in the table below.
9. Shut down the boiler. Close the gas shut-off valve. Remove the pressure gauge. Close test connector Ⓐ with the screw.
10. Open the gas shut-off valve and start the appliance.

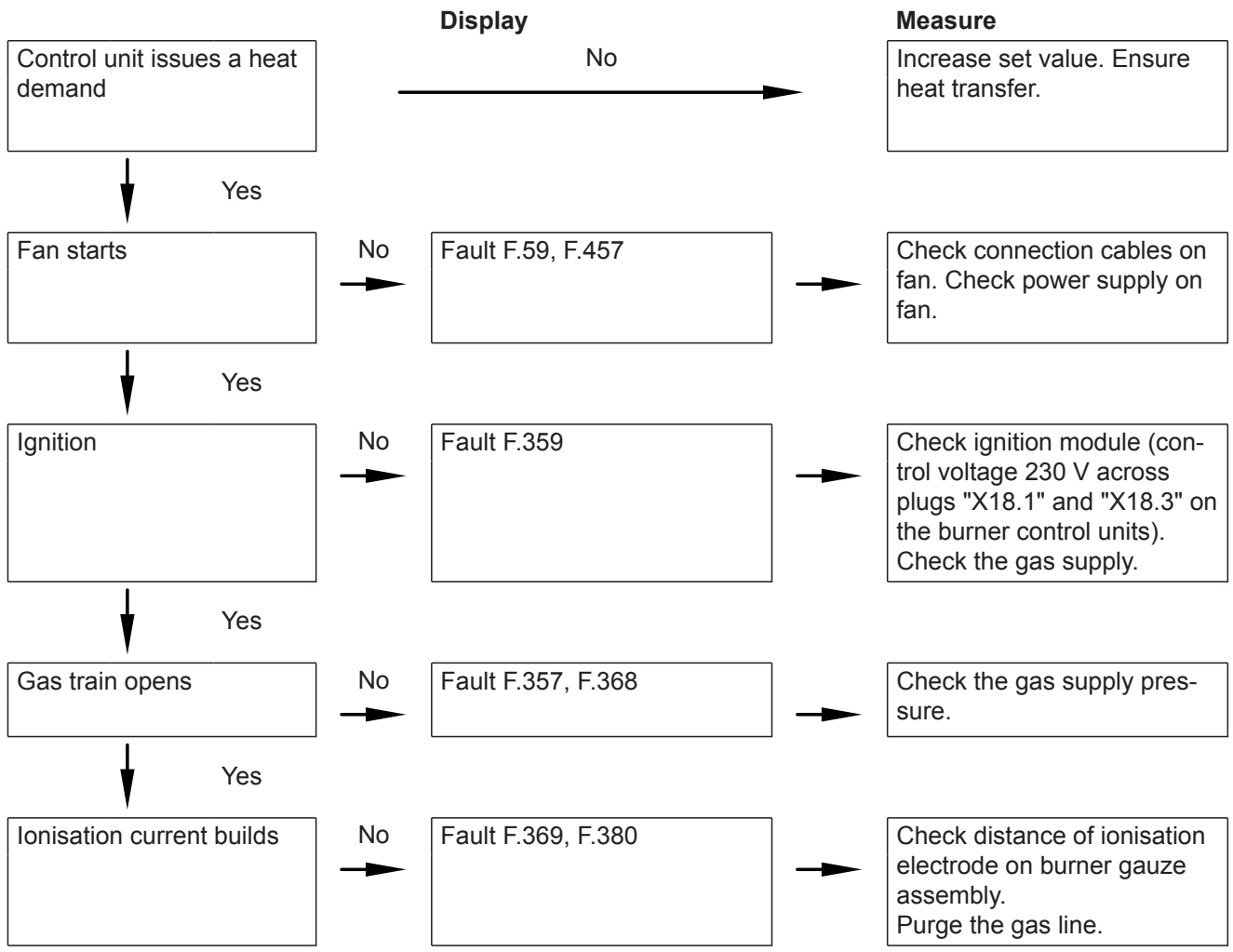
    ⚠ **Danger**
    Gas escaping from the test connector leads to a risk of explosion.
    Check gas tightness at test connector Ⓐ.

11. Fit front panel (see installation sequence).

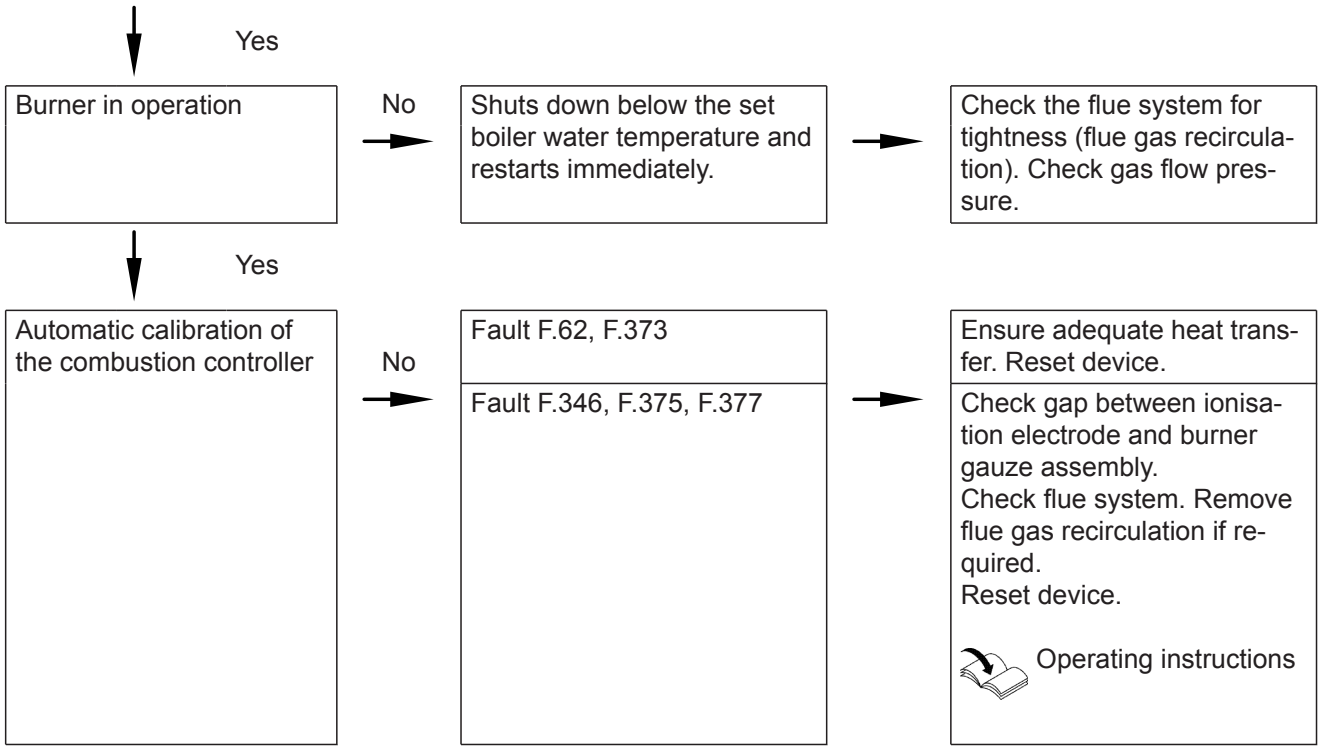
Checking the static pressure and supply pressure (cont.)

Supply pressure (flow pressure)					Measures
For natural gas				For LPG	
H	E, E+, M	L, LL, S, K	Lw		
Below 13 mbar (1.3 kPa)	Below 17 mbar (1.7 kPa)	Below 18 mbar (1.8 kPa)	Below 16 mbar (1.6 kPa)	Below 25 mbar (2.5 kPa)	Do not start the boiler. Notify your gas supply utility or LPG supplier.
13 to 33 mbar (1.3 to 3.3 kPa)	17 to 33 mbar (1.7 to 3.3 kPa)	18 to 33 mbar (1.8 to 3.3 kPa)	16 to 33 mbar (1.6 to 3.3 kPa)	25 to 57.5 mbar (2.5 to 5.75 kPa)	Start the boiler.
Above 33 mbar (3.3 kPa)	Above 33 mbar (3.3 kPa)	Above 33 mbar (3.3 kPa)	Above 33 mbar (3.3 kPa)	Above 57.5 mbar (5.75 kPa)	Install a separate gas pressure governor upstream of the system. Set the pre-charge pressure to 20 mbar (2.0 kPa) for natural gas and 50 mbar (5.0 kPa) for LPG. Notify your gas supply utility or LPG supplier.

Function sequence and possible faults



Function sequence and possible faults (cont.)



For further details regarding faults, see page "Troubleshooting".

Setting the max. heating output

A limit can be set on the maximum heating output for **heating mode**. The limit is set via the modulation range.

Note
The flow rate must be checked before the max. heating output can be adjusted. Ensure adequate heat transfer.

Tap the following buttons:

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. Use ∧/∨ to select **"System configuration"**.
3. **OK**
4. Use ∧/∨ to select **"Boiler"**.
5. **OK**
6. Use ∧/∨ to select parameter **596.0 "Maximum heating output"**.
7. **OK**
8. Use ∧/∨ to set the required value in % of rated heating output. Delivered condition 100 %.
9. **OK**

Adjusting the pump rate of the integral circulation pump

Operation of the integral circulation pump as heating circuit pump for heating circuit 1

The pump speed and consequently the pump rate are controlled subject to the outside temperature and the switching times for heating mode or reduced mode. The minimum and maximum speeds for heating mode can be matched to the existing heating system at the control unit.

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Adjusting the pump rate of the integral… (cont.)

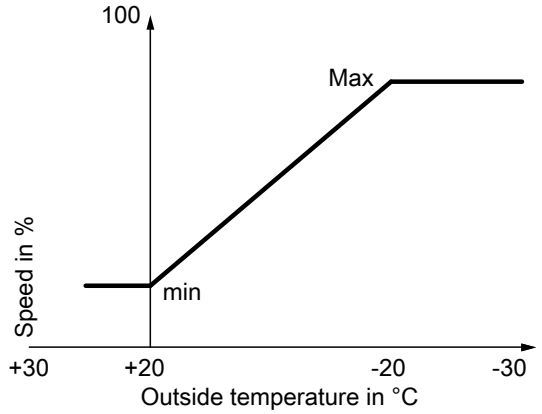

Fig. 35

Setting (%) in Heating circuit 1 group:
- Min. speed: Parameter 1102.0
- Max. speed: Parameter 1102.1

- In the delivered condition, the minimum pump rate and the maximum pump rate are set to the following values:

Rated heating output in kW	Speed settings in the delivered condition in %	
	Min. pump rate	Max. pump rate
11	50	65
19	50	85
25	50	95
32	50	100

- In the following system conditions, the internal circulation pump is operated at a constant speed:
  - Low loss header or heating water buffer cylinder and heating circuits with mixer
  - Continuous operation

  Speed setting (%): Parameter 1100.2 in the Boiler group

Residual head of integral circulation pump

Gas condensing system boiler up to 32 kW and gas condensing combi boiler up to 25 kW

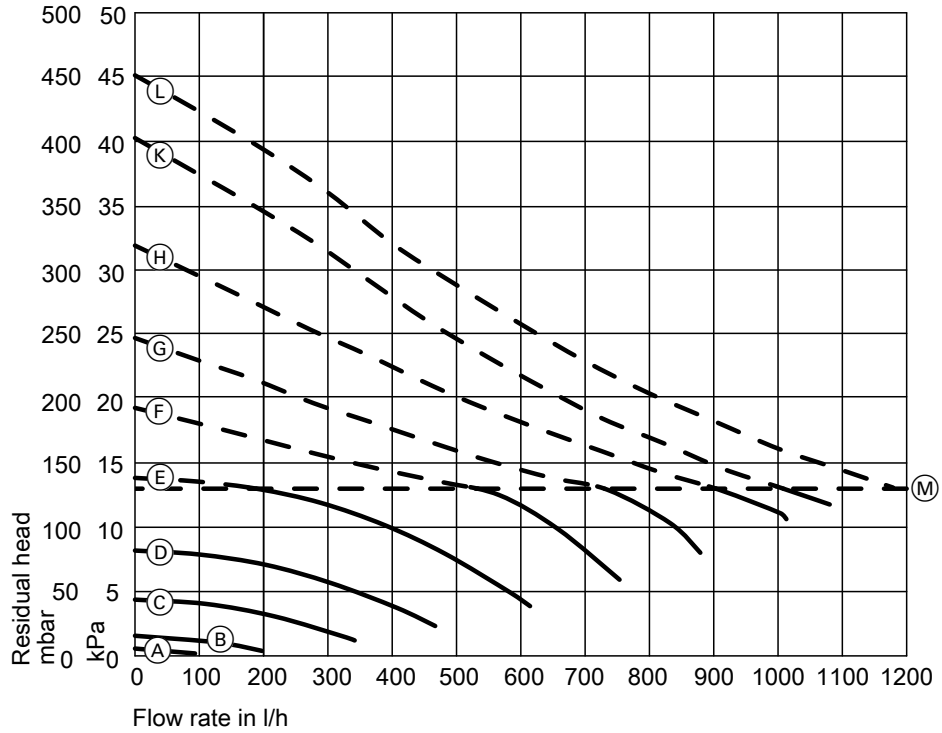

Fig. 36

Ⓜ Upper operational limit

Adjusting the pump rate of the integral… (cont.)

Gas condensing combi boiler 32 kW

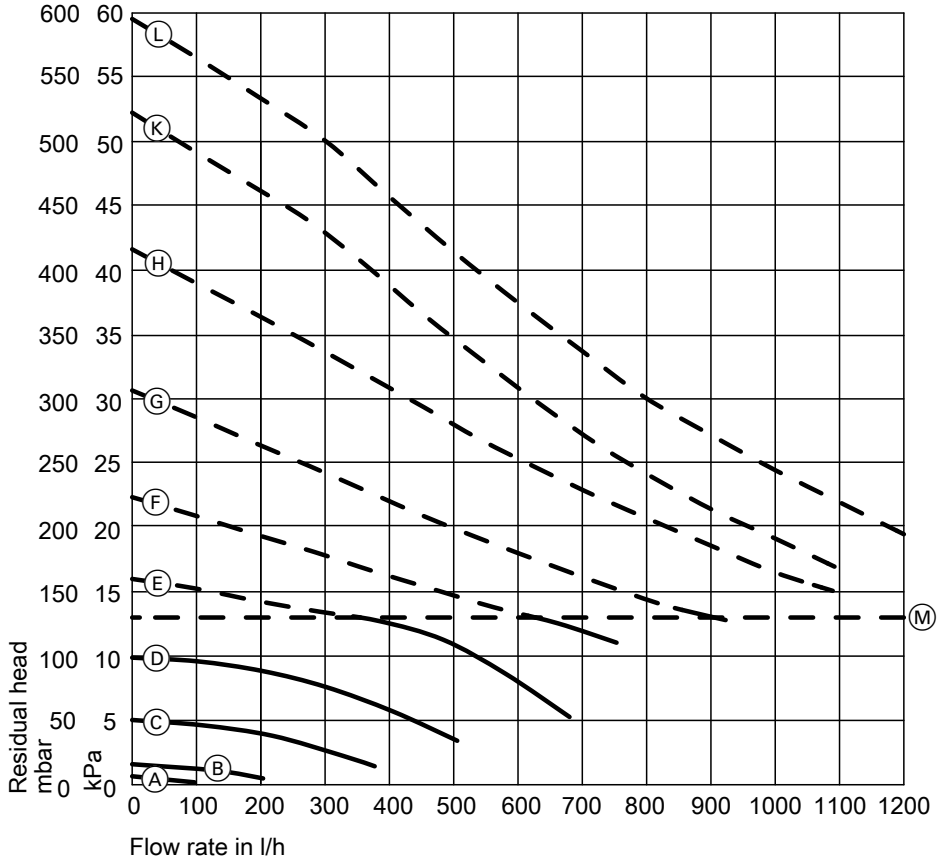

Fig. 37

Ⓜ Upper operational limit

Curve	Pump rate, circulation pump
Ⓐ	10 %
Ⓑ	20 %
Ⓒ	30 %
Ⓓ	40 %
Ⓔ	50 %
Ⓕ	60 %
Ⓖ	70 %
Ⓗ	80 %
Ⓚ	90 %
Ⓛ	100 %

Activating screed drying

Screed drying

6 different temperature profiles can be set for screed drying:
Preset temperature profiles can be set via parameter **897.0 "Screed drying"** in the General group.

For further details, see “Function description”.

Tightness test on balanced flue system (annular gap check)

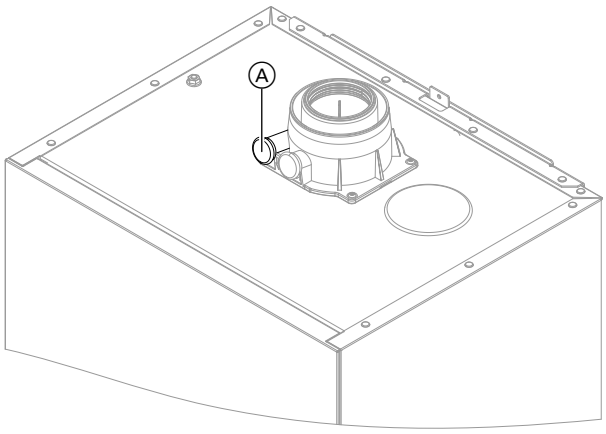

Fig. 38

Ⓐ Combustion air aperture

For balanced flue systems tested together with the heat generator, there is no requirement for a tightness test (overpressure test) during commissioning by the flue gas inspector.
In this case, we recommend that a simple tightness test is carried out during system commissioning. For this, check the CO_2 or O_2 concentration in the combustion air at the annular gap of the balanced flue pipe.
If the CO_2 concentration is less than 0.2 % or the O_2 concentration is greater than 20.6 %, the flue pipe is deemed to be sufficiently gas-tight.

If actual CO_2 values are greater or O_2 values are lower, then pressure test the flue pipe with a static pressure of 200 Pa.

! **Please note**
If the test port is not sealed, combustion air is drawn in from the room.
After the tightness test, re-seal the test port with the plug.

Removing the burner

Note
If the programming unit is located at the top: Move the programming unit down into the service position. See page 41.

Removing the burner (cont.)

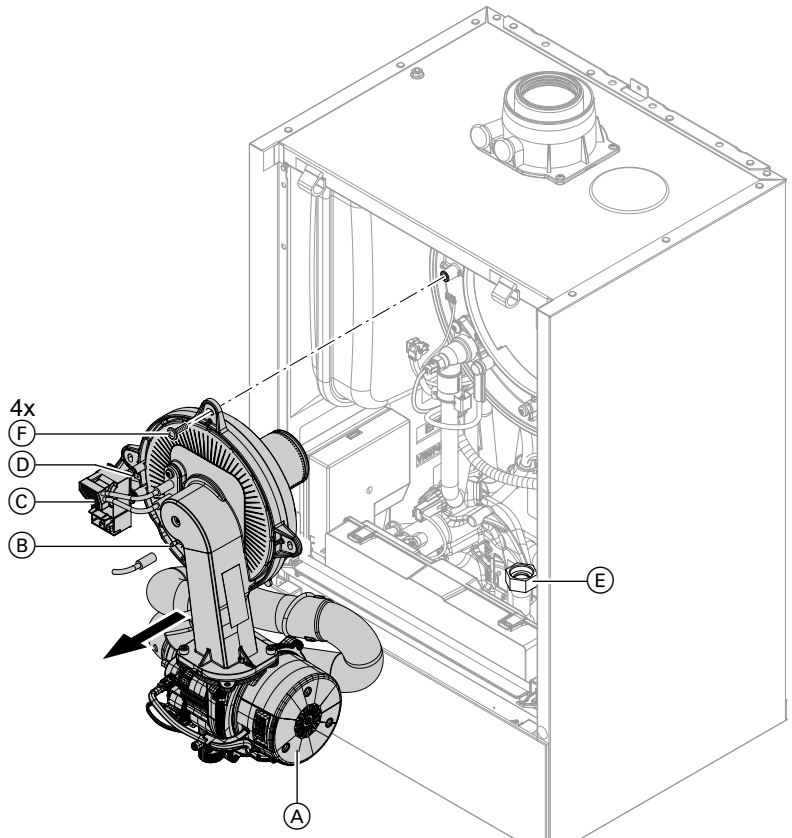

Fig. 39

1. Turn off the ON/OFF switch.
2. Close the gas shut-off valve and safeguard against reopening.
3. Disconnect cables and leads from:
   - Fan motor Ⓐ (2 plugs)
   - Ionisation electrode Ⓑ
   - Ignition unit Ⓒ
   - Earth Ⓓ
4. Undo gas supply pipe fitting Ⓔ.
5. Undo four screws Ⓕ and remove the burner.

   Note
   Cover gas connection Ⓔ so that no small parts can fall into it.

Checking the burner gasket and burner gauze assembly

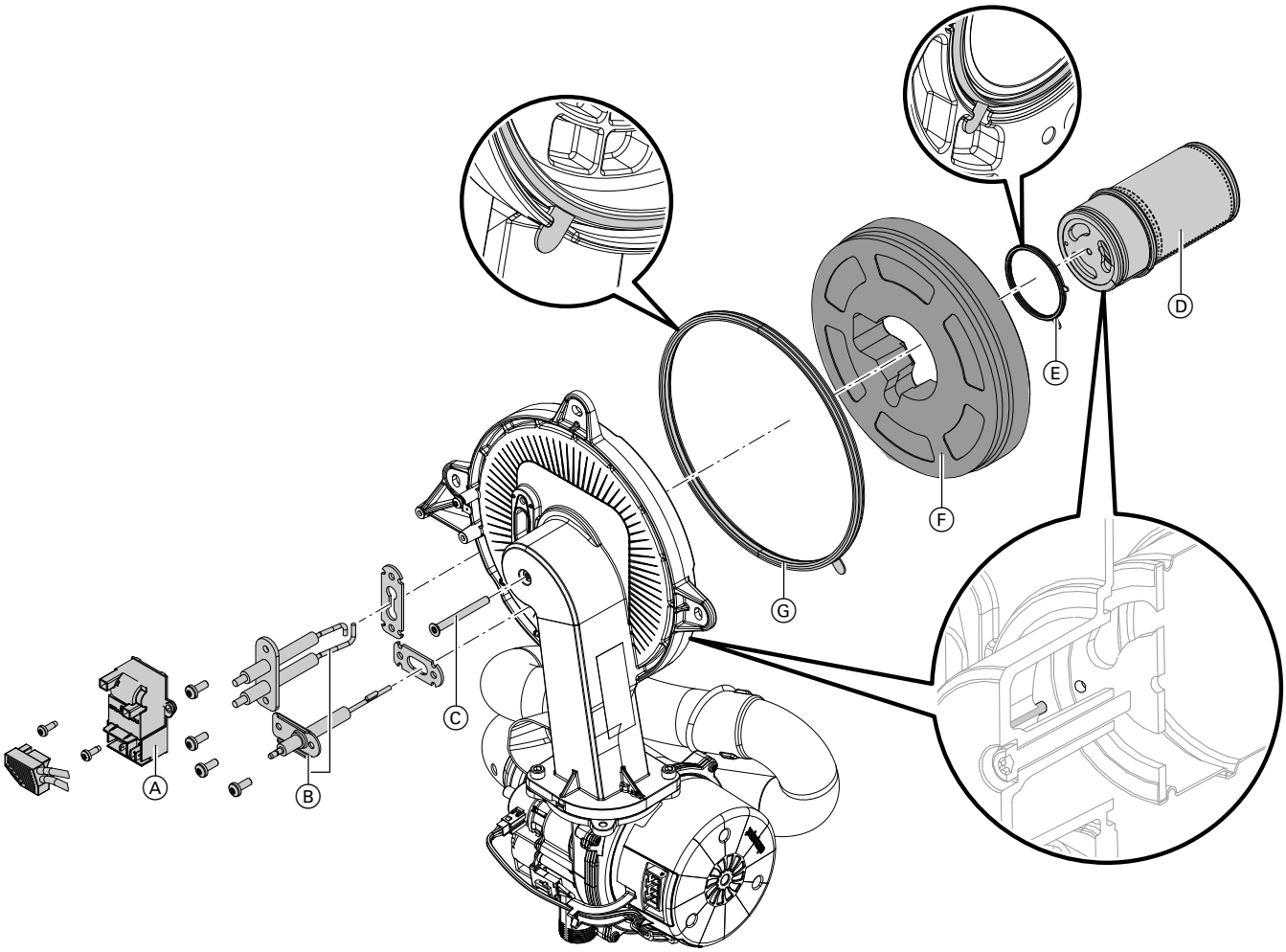

Fig. 40

Check burner gauze assembly Ⓓ, electrodes Ⓑ and gasket Ⓖ for damage. Only remove and replace components if they are damaged or worn.

Note
If replacing the burner gauze assembly, also replace the gauze assembly gasket and the fixing screw.

1. Disconnect plug with ignition electrode leads from ignition unit Ⓐ.
2. Remove electrodes Ⓑ.
3. Undo Torx screw Ⓒ. Hold onto burner gauze assembly Ⓓ when undoing the screw.
4. Remove burner gauze assembly Ⓓ with gasket Ⓔ and thermal insulation ring Ⓕ. Check components for damage.
5. Install new burner gasket Ⓖ. Observe correct installation position. Align the tab as per the diagram.
6. Insert thermal insulation ring Ⓕ and burner gauze assembly Ⓓ with gasket Ⓔ. Observe correct installation position. Align the tab as per the diagram.
7. Align the hole in burner gauze assembly Ⓓ with the burner door pin.
   Secure burner gauze assembly Ⓓ with Torx screw Ⓒ.
   Torque: 3.0 Nm.
8. Check thermal insulation ring Ⓕ for firm seating.
9. Fit electrodes Ⓑ. Check clearances, see following chapter.
   Torque: 4.5 Nm.

Checking and adjusting the ignition and ionisation electrodes

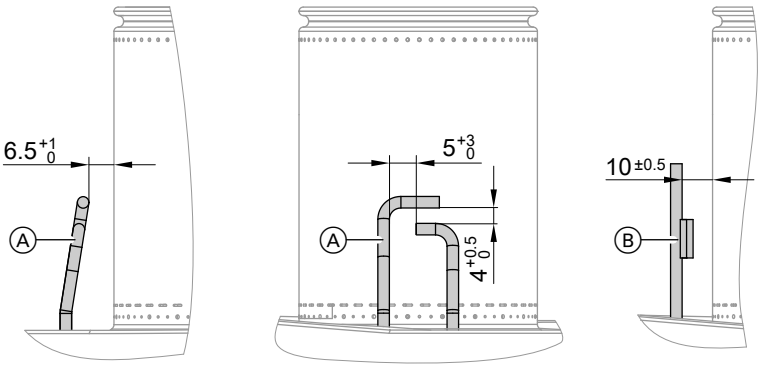

Fig. 41

Ⓐ Ignition electrodes
Ⓑ Ionisation electrode

1. Check the electrodes for wear and contamination.
2. Clean the electrodes with a small brush (not a wire brush) or sandpaper.
3. Check the electrode gaps. If the gaps are not as specified or the electrodes are damaged, replace the electrodes and gaskets and adjust them as required. Tighten the electrode fixing screws to a torque of 4.5 Nm.

Checking the back draught safety device

Only for multiple connections to a flue system or multi boiler systems with a flue gas cascade.

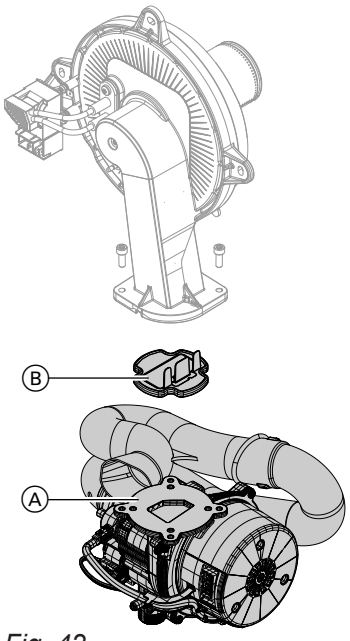

Fig. 42

1. Undo 2 screws and remove fan Ⓐ.
2. Remove back draught safety device Ⓑ.
3. Check the damper and gasket for dirt and damage. Replace if necessary.
4. Refit back draught safety device Ⓑ.
5. Refit fan Ⓐ and secure with 2 screws.
   Torque: 4.0 Nm

Cleaning the heating surfaces

Please note
Scratches to the surfaces of the heat exchanger that come into contact with hot gas can result in corrosion damage. Brushing can cause deposits to become lodged in the gaps between the coils. **Never use brushes to clean the heating surfaces.**

Please note
Prevent damage due to cleaning water.
Cover electronic components with suitable watertight material.

Note
Discolouration on the heat exchanger surface is a normal sign of use. It has no bearing on the function and service life of the heat exchanger.
The use of chemical cleaning agents is not required.

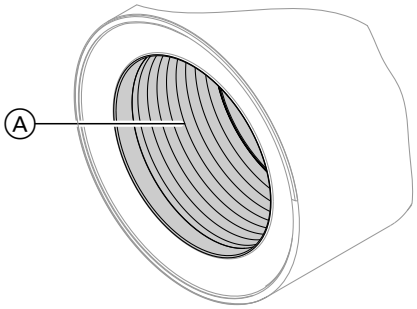

Fig. 43

1. Use a vacuum cleaner to remove combustion residues from heating surface Ⓐ of the heat exchanger.
2. Flush heating surface Ⓐ with water.
3. Check condensate drain. Clean the trap: See the following chapter.

Checking the condensate drain and cleaning the trap

Please note
Prevent damage due to condensate.
Cover electronic components with suitable watertight material.

Checking the condensate drain and cleaning the… (cont.)

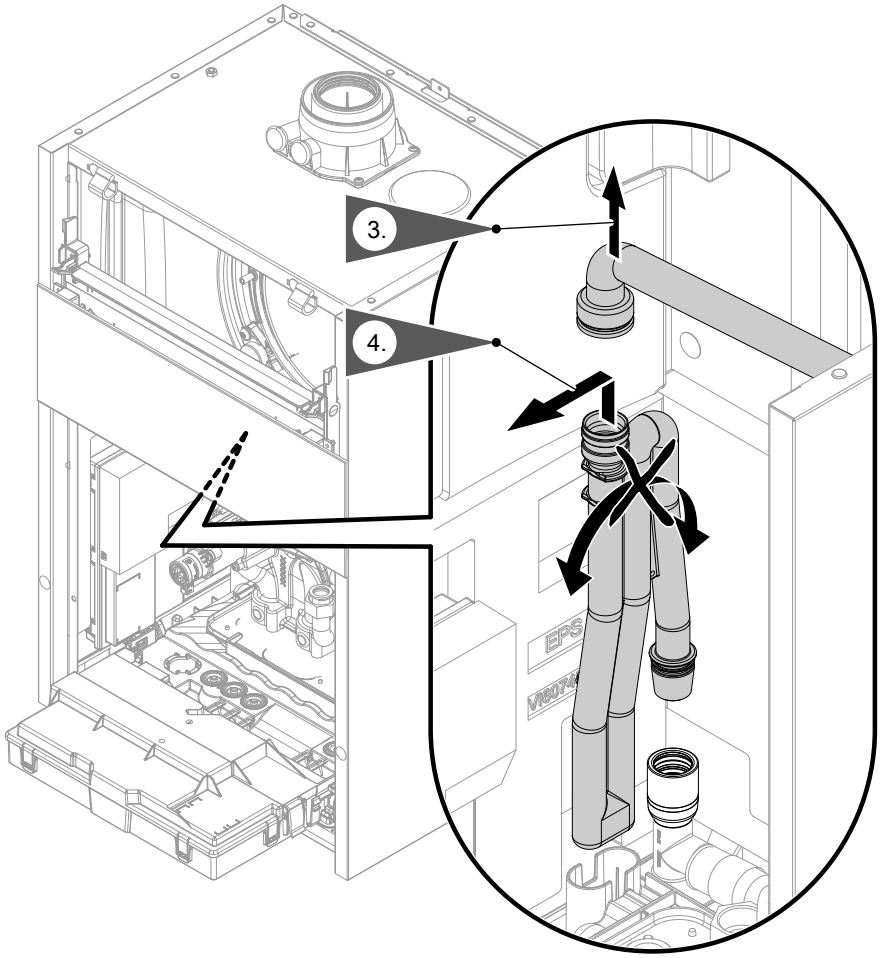

Fig. 44

1. Move the bracket together with the programming unit upwards. See "Moving the programming unit to the maintenance position".
2. Pivot the HMU heat management unit forwards.
3. Remove the black supply hose.
4. Pull trap upwards out of the drain hose.
5. Hold trap as straight as possible and remove. Ensure that no condensate runs out.
6. Clean the trap.
7. Fill the trap with water and refit it on the drain hose.

   Please note
   If the trap is not filled with water, flue gas can escape.
   Only start the appliance when the trap has been filled.
   Check that the trap is seated correctly.

Multi boiler system:
Clean the trap in the flue gas collector as well.

8. Refit supply hose.
9. **Danger**
   Risk of electric shock from escaping condensate.
   Check the connections for leaks and check that the trap is seated correctly.

   Note
   Route the drain hose without any bends and with a constant fall.

Installing the burner

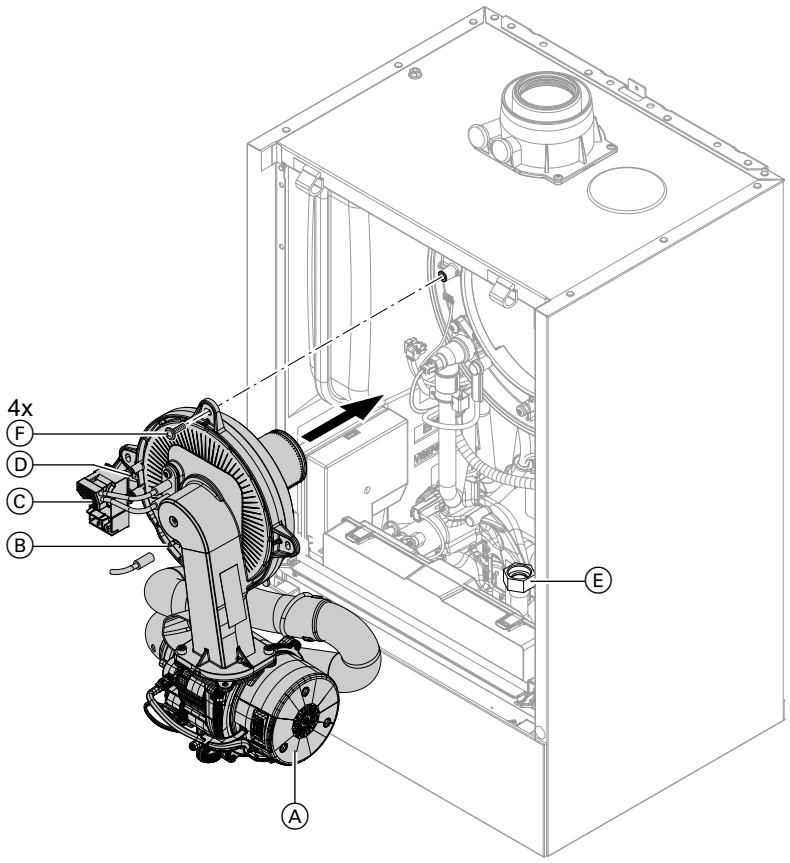

Fig. 45

1. If necessary, move the programming unit.
2. Insert the burner. Tighten screws Ⓕ diagonally.
   Torque: 6.5 Nm
3. Fit gas supply pipe Ⓔ with a new gasket.
   Torque: 30 Nm
4. Check the gas connections for leaks.

   Danger
   Escaping gas leads to a risk of explosion. Check all fittings for gas tightness. In the case of wall mounted appliances, also check the gas shut-off valve fitting on the underside.

5. Connect the cables/leads:
   - Fan motor Ⓐ (2 plugs)
   - Ionisation electrode Ⓑ
   - Ignition unit Ⓒ
   - Earth Ⓓ

Checking the neutralising system (if installed)

Checking the flow limiter (only for gas condensing combi boiler)

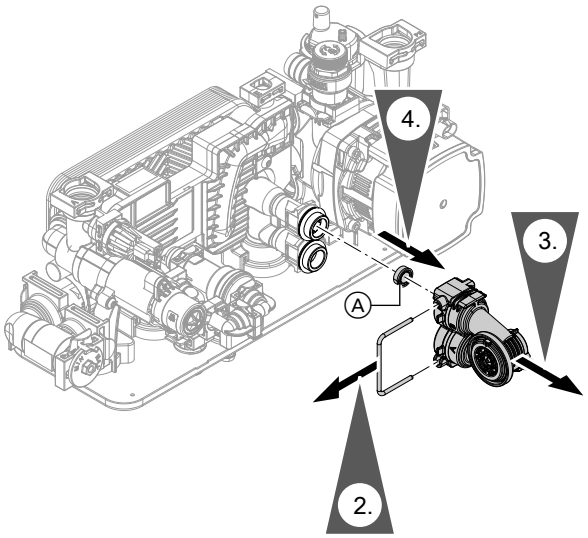

Fig. 46

1. Drain the boiler on the DHW side.
2. Remove the spring clip.
3. Remove the flow sensor.
4. Check flow limiter Ⓐ. Replace in case of excessive scaling or damage. Reinsert.
5. Mount the flow sensor with new gaskets.

Danger
Risk of electric shock from escaping heating water or DHW.
Check all water side connections for tightness.

Flow limiter

Serial no. (type plate)	Flow rate l/min	Colour
7544719	12	Red
7544720	14	Pink
7745530	16	Blue
7745531	12	Red
7544721	14	Pink
7544722	16	Blue

Checking the expansion vessel and system pressure

Note
The burner control unit can be removed to allow better access to the test connector:
- *Pull the burner control unit to the right at the top until the hook and loop fastening comes apart.*
- *Undo the catch and remove the burner control unit from the retainer by lifting it upwards.*

Note
The expansion vessel can lose some of its charge pressure over time. When the boiler heats up, the pressure rises to 2 or 3 bar (0.2 or 0.3 MPa). The safety valve may also respond and discharge the excess pressure.
Therefore check the expansion vessel pre-charge pressure annually.

Check whether the installed expansion vessel is adequate for the system water volume (GB only).
Carry out this test on a cold system.

1. Drain the system until "0" is shown on the pressure indicator.
2. If the pre-charge pressure of the expansion vessel is lower than the static system pressure: Top up with nitrogen until the pre-charge pressure is 0.1 to 0.2 bar (10 to 20 kPa) higher than the static system pressure.
3. Top up with water until the charge pressure of the cooled system is at least 1.0 bar (0.1 MPa), and is 0.1 to 0.2 bar (10 to 20 kPa) higher than the pre-charge pressure of the expansion vessel.
Permiss. operating pressure: 3 bar (0.3 MPa)

Checking the safety valve function

Checking the electrical connections for firm seating

Checking all gas equipment for tightness at operating pressure

Danger
Escaping gas leads to a risk of explosion.
Check gas equipment (including inside the appliance) for leaks.

Note
Only use suitable and approved leak detection agents (EN 14291) and devices for the tightness test. Leak detection agents with unsuitable constituents (e.g. nitrides, sulphides) can cause material damage. Remove residues of the leak detection agent after testing.

Fitting the front panel

See page 30.

Checking the combustion quality

The electronic combustion controller automatically ensures optimum combustion quality. During commissioning/maintenance, only the combustion values need to be checked. To do this, test the CO content and CO_2 or O_2 content, and record these in the report on page 117.

Note
To prevent operating faults and damage, operate the appliance with uncontaminated combustion air.

Permissible CO content

The CO content must be < 1000 ppm for all gas types.

Permissible CO_2 or O_2 content

Operation with natural gas

Rated heating output (kW)	CO_2 content (%)		O_2 content (%)	
	Upper heating output	Lower heating output	Upper heating output	Lower heating output
11	7.3 - 10.5	7.5 - 10.5	2.1 - 7.9	2.1 - 7.6
19	7.5 - 10.5	7.5 - 10.5	2.1 - 7.6	2.1 - 7.6
25	7.5 - 10.5	7.5 - 10.5	2.1 - 7.6	2.1 - 7.6
32	7.3 - 10.0	7.5 - 10.5	3.1 - 7.9	2.1 - 7.6

Operation with LPG
- CO_2 content: 8.4 - 11.8 %
- O_2 content: 3.1 - 8.1 %

If the actual CO, CO_2 or O_2 values lie outside their respective ranges, proceed as follows:
- Check the balanced flue system for tightness; see page 47.
- Check the ionisation electrode and connecting cable; see page 50.

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Checking the combustion quality (cont.)

Note
During commissioning, the combustion controller carries out an automatic calibration. Allow approx. 50 s after the burner has started before testing the emissions.

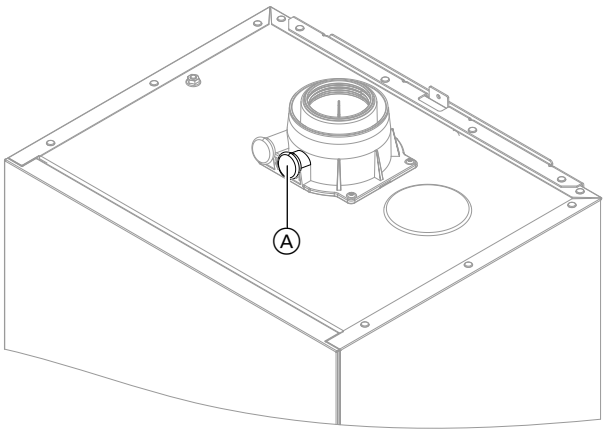

Fig. 47

1. Connect a flue gas analyser at flue gas port Ⓐ on the boiler flue connection.
2. Open the gas shut-off valve. Start the boiler. Create a heat demand.
3. Adjust the lower heating output. See the following chapter.
4. Check the CO_2 content. If the actual value deviates from the permissible ranges, implement steps listed above.
5. Enter the actual value into the report.
6. Adjust the upper heating output. See the following chapter.
7. Check the CO_2 content. If the actual value deviates from the permissible ranges by more than 1 %, implement steps listed above.
8. Enter the actual value into the report.
9. Re-seal test port Ⓐ.

Danger
Escaping flue gas can damage your health.
Check test port Ⓐ for leaks.

Setting the upper/lower heating output

Note
Ensure adequate heat transfer.

Tap the following buttons:

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. Use ∧/∨ to select **"Actuator test"**.
3. **OK**
4. Use ∧/∨ to select the **"Heating"** group.
5. **OK**
6. Use ∧/∨ to select **"Primary circuit pump, speed"**.
7. **OK**
8. Use ∧/∨ to set the max. value.
9. **OK**
10. ☰
11. Use ∧/∨ to select the **"Boiler"** group.
12. **OK**
13. Use ∧/∨ to select **"Burner modulation, set value"**.
14. **OK**
15. Set the lower heating output:
    Select **"Minimum heating output"**.
    The burner now operates at the lower heating output.
16. Set the upper heating output:
    Select **"Maximum heating output"**.
    The burner now operates at the upper heating output.

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Checking the flue system for unrestricted flow and leaks

Checking the external LPG safety valve (if installed)

Matching the control unit to the heating system

The control unit must be matched to the system equipment level.
Set the parameters according to the accessories fitted:

Accessories installation and service instructions

Adjusting heating curves

Tap the following buttons:

1. ☰
2. Use ∧/∨ to select **"Settings"**.
3. **OK**
4. Use ∧/∨ to select **"Heating curve"**.
5. **OK**
6. Use ∧/∨ to select **"Heating circuit ..."** for the required heating circuit.
7. **OK**
8. Use ∧/∨ to select **"Slope"** or **"Level"**.
9. **OK**
10. Use ∧/∨ to set a value according to the system requirements.
11. **OK** to confirm

Calling up and resetting the service display

Checking service messages

1. ☰
2. Use ∧/∨ to select **"Active messages"**.
3. **OK**
4. Use ∧/∨ to select **"Service"**.
5. **OK**
   Existing messages are displayed.

Service reset (after service has been carried out)

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. Use ∧/∨ to select **"Reset service messages"**.
3. **OK**

Instructing the system user

The system installer should hand the operating instructions to the system user and instruct the user in operating the system.

This includes all components installed as accessories, e.g. remote control units. In addition, the system installer must make the user aware of the required maintenance work.

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Instructing the system user (cont.)

DHW hygiene

For optimum DHW hygiene, avoid DHW temperatures that are < 50 °C. For larger systems and systems with low water exchange, the temperature should not drop below < 60 °C.

Hygiene function

The DHW can be heated to a specified (higher) set DHW temperature for a period of one hour.

To activate the function, see the operating instructions. Inform the system user what DHW temperatures should be set and the risks associated with having a raised outlet temperature at the draw-off points.

Calling up parameters

- Parameters are split into the following groups:
  - **"General"**
  - **"Boiler"**
  - **"DHW"** (domestic hot water)
  - **"Heating circuit 1/2/3"**
  - **"Solar"**
- Heating systems with one heating circuit without mixer and one or 2 heating circuits with mixer: Below, the heating circuit without mixer is designated **"Heating circuit 1"** and the heating circuits with mixer as **"Heating circuit 2"** or **"Heating circuit 3"**. If the heating circuits have been renamed, the chosen designation appears.

Note
The display and setting of some parameters is dependent on:
- *Heat generator*
- *Connected accessories and the functions associated with them*

Tap the following buttons:

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. Use ∧/∨ to select **"System configuration"**.
3. **OK**
4. Use ∧/∨ to select the required group.
5. **OK**
6. Use ∧/∨ to select the parameter to be set. See tables below.
7. **OK**
8. ∧/∨ for the required value.
9. **OK**

General

Note
*Parameter values in **bold** are factory settings.*

508.0 "UTC time zone"

Setting		Explanations
		Setting of the UTC time zone in which the appliance is located.
	2	The factory setting is UTC +1 h
	–24 to +24	Time difference adjustable from –12 h to +12 h in increments of 0.5 h

528.0 "Set flow temperature for external demand"

Setting		Explanations
		Set flow temperature for external demand
	70	Set flow temperature in the delivered condition 70 °C
	20 to 82	Set flow temperature adjustable from 20 to 82 °C in 1 °C increments

896.0 "Display correction for outside temperature"

Setting		Explanations
		Correction of measured outside temperature
	0	Correction in the delivered condition 0 K
	-10 to + 10	Correction adjustable from -10 to + 10 K in 1 K increments

General (cont.)

897.0 "Screed drying"

Setting		Explanations
Not active	**0**	Screed drying can be set in accordance with selectable temperature/time profiles. For individual profile curves, see chapter "Function description".
Diagram 1	2	
Diagram 2	3	
Diagram 3	4	
Diagram 4	5	
Diagram 5	6	
Diagram 6	7	

912.0 "Automatic summer/wintertime changeover"

Setting		Explanations
No	0	Automatic changeover disabled
Yes	**1**	Automatic changeover enabled

912.1 "Earliest day of changeover from winter to summertime"

Setting		Explanations
	25	Changeover from 02:00 h to 03:00 h occurs on the Sunday after or on this set date.
	1 to 31	Day of changeover adjustable from 1st to 31st of the month

912.2 "Month of changeover from winter to summertime"

Setting		Explanations
	3	Month of changeover: March
	1 to 12	Month of changeover adjustable from January to December

912.3 "Earliest day of changeover from summer to wintertime"

Setting		Explanations
	25	Changeover from 03:00 h to 02:00 h occurs on the Sunday after or on this set date.
	1 to 31	Day of changeover adjustable from 1st to 31st of the month

912.4 "Month of changeover from summer to wintertime"

Setting		Explanations
	10	Month of changeover: October
	1 to 12	Month of changeover adjustable from January to December

1098.4 "Gas volume correction factor"

Setting		Explanations
		Value is provided on the gas supplier's bill. Used for gas consumption data.
	1.0000	
	0.7000 to 1.0000	Gas volume correction factor adjustable from 0.7000 to 1.0000 in increments of 0.0001. Round the value up or down if necessary.

General (cont.)

1098.5 "Calorific value"

Setting		Explanations
		Value is provided on the gas supplier's bill. Used for gas consumption data.
	10.0000	
	5.0000 to 40.0000	Calorific value adjustable from 5.0000 to 40.0000 kWh/m^3 in increments of 0.0001

1139.0 "Outside temperature limit for cancelling reduced set room temperature"

Setting		Explanations
		Temperature limit for cancelling reduced set room temperature
	-5	Temperature limit in the delivered condition - 5 °C
	-61 to +10	Temperature limit adjustable from - 61 to + 10 °C in 1°C increments

1139.1 "Outside temperature limit for raising the reduced set room temperature to the standard set room temperature"

Setting		Explanations
		Temperature limit for raising the reduced set room temperature (see function description)
	-14	Temperature limit in the delivered condition - 14 °C
	-60 to +10	Temperature limit adjustable from - 60 to + 10 °C in 1 °C increments

1504.0 "Source for date and time"

Setting		Explanations
		Selection of source for date and time The setting depends on the heat generator and accessories.
Local	**0**	Factory setting: The date and time are adopted from the control unit.
	1	Higher ranking control system
	2	Internet protocol (see parameter "508.0")

Boiler

Note
*Parameter values in **bold** are factory settings.*

521.0 "Time interval in burner hours until the next service"

Setting		Explanations
		Number of burner hours to run until next service
	0	
	0 to 25500	Burner hours until next service adjustable from 0 to 25500

Boiler (cont.)

522.3 "Interval until the next service"

Setting		Explanations
		Interval until the next service
	0	No interval selected
	1	3 months
	2	6 months
	3	12 months
	4	18 months
	5	24 months

596.0 "Maximum heating output"

Setting		Explanations
		A limit can be set on the maximum heating output for heating mode.
	100	Heating output in the delivered condition 100 %
	0 to 100	Adjustable from 0 to 100 %

597.0 "Limit, max. heating output for DHW heating"

Setting		Explanations
		A limit can be set on the maximum heating output for DHW heating.
	100	Heating output in the delivered condition 100 %
	0 to 100	Adjustable from 0 to 100 %

1100.2 "Set speed of the primary circuit pump in heating mode"

Setting		Explanations
		Set speed of internal circulation pump ▪ In heating mode ▪ With external demand ▪ With demand in conjunction with a low loss header
	...	Delivered condition specified by settings specific to the appliance
	20 to 100	Set speed adjustable from 20 to 100 %

1411.0 "Clear maintenance messages"

Setting		Explanations
		Clear maintenance messages once maintenance has been performed.
No	**0**	Maintenance messages are active (if present).
Yes	1	Clear maintenance messages once.

1503.0 "Minimum heating output"

Setting		Explanations
		A limit can be set on the minimum heating output for heating mode.
	...	Delivered condition specified by settings specific to the appliance
	5 to 100	Adjustable from 5 to 100 %

Boiler (cont.)

1606.0 "Minimum burner pause time"

Setting		Explanations
		The minimum burner pause time can be set subject to boiler load.
	0	Delivered condition, fixed setting for minimum burner pause time
	1	Integral method

1606.4 "Integral threshold for burner switch-off"

Setting		Explanations
		Only effective if parameter 1606.0 has been set to 1.
	20	Factory setting 20 K x min
	5 to 255	Adjustable from 5 to 255 20 K x min The higher the value, the later the burner switches off.

DHW (domestic hot water)

Note
*Parameter values in **bold** are factory settings.*

497.1 "DHW circulation pump for auxiliary function DHW heating"

Setting		Explanations
		DHW circulation pump:
OFF	**0**	OFF during hygiene function
ON	1	ON during hygiene function
		⚠ **Danger** Risk of injury due to increased DHW temperature. Inform the system user of the risk from the higher outlet temperature at the taps.

497.2 "DHW circulation pump for DHW heating"

Setting		Explanations
		DHW circulation pump:
OFF	**0**	OFF during DHW heating to standard set value
ON	1	ON during DHW heating to standard set value

503.0 "Scald protection"

Setting		Explanations
		The adjustable water temperature is limited to a maximum value.
OFF	0	Scald protection OFF ⚠ **Danger** Risk of injury due to increased DHW temperature. Inform the system user of the risk from the higher outlet temperature at the taps.
ON	**1**	Scald protection ON (maximum value 60 °C)

DHW (domestic hot water) (cont.)

534.0 "Circulation pump run-on"

Setting		Explanations
		Circulation pump run-on after cylinder heating
120 s	**120**	Delivered condition 120 s run-on
	0 to 900	Run-on time adjustable from 0 to 900 s in 60 s increments

1085.0 "Cylinder heating: Set start point"

Setting		Explanations
		Start point for DHW heating **below** set DHW temperature
	25	Delivered condition start point 2.5 K below set DHW temperature
	10 to 100	Adjustable start points: 10: 1.0 K ... 100: 10.0 K Irrespective of this, the stop point is 2.5 K **above** the set DHW temperature.

1087.0 "Max. duration of DHW heating"

Setting		Explanations
		After a set period of time has elapsed, DHW heating ends even though the set DHW temperature has not yet been reached. Cannot be adjusted on gas condensing combi boilers
	60	Factory setting 60 min
	0	No DHW heating
	60 to 240	Duration of DHW heating adjustable from 60 to 240 min in 1 min increments

1087.1 "Min. delay until next DHW heating"

Setting		Explanations
		Minimum delay before DHW heating starts again, even though there is a demand. Cannot be adjusted on gas condensing combi boilers
	60	Delivered condition, delay of 60 min
	60 to 240	Delay adjustable from 60 to 240 min in 1 min increments

1101.2 "Set speed of the primary circuit pump for DHW heating"

Setting		Explanations
		Set speed of the internal circulation pump when operated as a circulation pump for cylinder heating
	...	Delivered condition specified by settings specific to the appliance
	20 to 100	Set speed adjustable from 20 to 100 %

Heating circuit 1, Heating circuit 2, Heating circuit 3

Note
*Parameter values in **bold** are factory settings.*

424.3 "Set flow temperature increased when switching from operation with reduced room temperature to operation with standard/comfort room temperature, heating circuit 1"

Setting		Explanations
		Set flow temperature increased when changing from operation at reduced room temperature to operation at standard room temperature or comfort room temperature. See also chapter "Function description"
0 K	**0**	Delivered condition increase 0 K
	0 to 20	Temperature rise adjustable from 0 to 20 K

424.4 "Duration for set flow temperature increase, heating circuit 1"

Setting		Explanations
		Duration for set flow temperature increase See also chapter "Function description"
60 min	**60**	Delivered condition 60 min
	0 to 120	Temperature rise adjustable from 0 to 120 min

426.3 "Set flow temperature increased when switching from operation with reduced room temperature to operation with standard/comfort room temperature, heating circuit 2"

Setting		Explanations
		Set flow temperature increased when changing from operation at reduced room temperature to operation at standard room temperature or comfort room temperature. See also chapter "Function description"
0 K	**0**	Delivered condition increase 0 K
	0 to 20	Temperature rise adjustable from 0 to 20 K

426.4 "Duration for set flow temperature increase, heating circuit 2"

Setting		Explanations
		Duration for set flow temperature increase See also chapter "Function description"
60 min	**60**	Delivered condition 60 min
	0 to 120	Temperature rise adjustable from 0 to 120 min

428.3 "Set flow temperature increased when switching from operation with reduced room temperature to operation with standard/comfort room temperature, heating circuit 3"

Setting		Explanations
		Set flow temperature increased when changing from operation at reduced room temperature to operation at standard room temperature or comfort room temperature. See also chapter "Function description"
0 K	**0**	Delivered condition increase 0 K
	0 to 20	Temperature rise adjustable from 0 to 20 K

Heating circuit 1, Heating circuit 2, Heating… (cont.)

428.4 "Duration for set flow temperature increase, heating circuit 3"

Setting		Explanations
		Duration for set flow temperature increase See also chapter "Function description"
60 min	**60**	Delivered condition 60 min
	0 to 120	Temperature rise adjustable from 0 to 120 min

933.3 "Priority, DHW heating, heating circuit 1"

Setting		Explanations
		Priority of DHW heating over the heating circuit
OFF	0	Without DHW heating priority
DHW	**1**	With DHW heating priority

933.6 "Operating mode, heating circuit 1"

Setting		Explanations
		Only adjust for systems with one heating circuit. See also parameter 933.7 Heating mode:
Weather-compensated without room temperature hook-up	**0**	Weather-compensated **without** room temperature influence
Weather-compensated with room temperature hook-up	1	Weather-compensated **with** room temperature influence

933.7 "Room influence factor, heating circuit 1"

Setting		Explanations
		The higher the value, the greater the influence of the room temperature on the set flow temperature of the heating circuit (heating curve). Operation with room temperature hook-up must be set for the heating circuit (parameter 933.6). Only change the value for systems with one heating circuit. For a sample calculation, see chapter "Heating curve" in the "Function description"
	8	Room influence factor
	0 to 64	Room influence adjustable from 0 to 64

934.3 "Priority, DHW heating, heating circuit 2"

Setting		Explanations
		Priority of DHW heating over heating circuit pump and mixer
OFF	0	Without DHW heating priority
DHW	**1**	With DHW heating priority

934.5 "Differential temperature, heating circuit 2"

Setting		Explanations
		The flow temperature of the heat generator is higher than the flow temperature of the heating circuit with mixer by an adjustable differential temperature. See also chapter "Function description".
8 K	**8**	Differential temperature in delivered condition 8 K
	0 to 20	Differential temperature adjustable from 0 to 20 K

Heating circuit 1, Heating circuit 2, Heating… (cont.)

934.6 "Operating mode, heating circuit 2"

Setting		Explanations
		See also parameter 934.7 Heating mode:
Weather-compensated without room temperature hook-up	**0**	Weather-compensated **without** room temperature influence
Weather-compensated with room temperature hook-up	1	Weather-compensated **with** room temperature influence

934.7 "Room influence factor, heating circuit 2"

Setting		Explanations
		The higher the value, the greater the influence of the room temperature on the set flow temperature of the heating circuit (heating curve). Operation with room temperature hook-up must be set for the heating circuit (parameter 934.6). Change value for heating circuit with mixer only. For a sample calculation, see chapter "Heating curve" in the "Function description"
	8	Room influence factor
	0 to 64	Room influence adjustable from 0 to 64

935.3 "Priority, DHW heating, heating circuit 3"

Setting		Explanations
		Priority of DHW heating over heating circuit pump and mixer
OFF	0	Without DHW heating priority
DHW	**1**	With DHW heating priority

935.5 "Differential temperature, heating circuit 3"

Setting		Explanations
		The flow temperature of the heat generator is higher than the flow temperature of the heating circuit with mixer by an adjustable differential temperature. See also chapter "Function description".
8 K	**8**	Differential temperature in delivered condition 8 K
	0 to 20	Differential temperature adjustable from 0 to 20 K

935.6 "Operating mode, heating circuit 3"

Setting		Explanations
		See also parameter 935.7 Heating mode:
Weather-compensated without room temperature hook-up	**0**	Weather-compensated **without** room temperature influence
Weather-compensated with room temperature hook-up	1	Weather-compensated **with** room temperature influence

Heating circuit 1, Heating circuit 2, Heating… (cont.)

935.7 "Room influence factor, heating circuit 3"

Setting		Explanations
		The higher the value, the greater the influence of the room temperature on the set flow temperature of the heating circuit (heating curve). Operation with room temperature hook-up must be set for the heating circuit (parameter 935.6). Change value for heating circuit with mixer only. For a sample calculation, see chapter "Heating curve" in the "Function description"
	8	Room influence factor
	0 to 64	Room influence adjustable from 0 to 64

1102.0 "Min. speed of speed-controlled primary/heating circuit pump in standard mode, heating circuit 1"

Setting		Explanations
		Minimum speed of the internal circulation pump in heating mode with standard room temperature
	...	Delivered condition specified by settings specific to the heat generator
	0 to 100	Minimum speed adjustable from 0 to 100 %

1102.1 "Max. speed of speed-controlled primary/heating circuit pump in standard mode, heating circuit 1"

Setting		Explanations
		Maximum speed of the internal circulation pump in heating mode with standard room temperature
	...	Delivered condition specified by settings specific to the heat generator
	0 to 100	Maximum speed adjustable from 0 to 100 %

1192.0 "Minimum flow temperature limit, heating circuit 1"

Setting		Explanations
		Minimum flow temperature limit for the heating circuit
20 °C	**20**	Minimum limit in the delivered condition 20 °C
	1 to 90	Setting range limited by heat generator-specific parameters

1192.1 "Maximum flow temperature limit, heating circuit 1"

Setting		Explanations
		Maximum flow temperature limit for the heating circuit
74 °C	**74**	Maximum limit in the delivered condition 74 °C
	10 to 100	Setting range limited by heat generator-specific parameters

1193.0 "Minimum flow temperature limit, heating circuit 2"

Setting		Explanations
		Minimum flow temperature limit for the heating circuit
20 °C	**20**	Minimum limit in the delivered condition 20 °C
	1 to 90	Setting range limited by heat generator-specific parameters

Heating circuit 1, Heating circuit 2, Heating… (cont.)

1193.1 "Maximum flow temperature limit, heating circuit 2"

Setting		Explanations
74 °C		Maximum flow temperature limit for the heating circuit
	74	Maximum limit in the delivered condition 74 °C
	10 to 100	Setting range limited by heat generator-specific parameters

1194.0 "Minimum flow temperature limit, heating circuit 3"

Setting		Explanations
20 °C		Minimum flow temperature limit for the heating circuit
	20	Minimum limit in the delivered condition 20 °C
	1 to 90	Setting range limited by heat generator-specific parameters

1194.1 "Maximum flow temperature limit, heating circuit 3"

Setting		Explanations
74 °C		Maximum flow temperature limit for the heating circuit
	74	Maximum limit in the delivered condition 74 °C
	10 to 100	Setting range limited by heat generator-specific parameters

1395.1 "Heating limit: Economy function, outside temperature, heating circuit 1"

Setting		Explanations
25 °C		Heating circuit pump logic function (summer economy control): Heating circuit pump switches off when outside temperature 1 K above selected value. Heating circuit pump switches back on when outside temperature 1 K below selected value.
	25	Delivered condition: Heating limit at outside temperature 25 °C
	10 to 35	Heating limit adjustable from 10 to 35 °C in 1 °C increments

1396.1 "Heating limit: Economy function, outside temperature, heating circuit 2"

Setting		Explanations
25 °C		Heating circuit pump logic function (summer economy control): Heating circuit pump switches off when outside temperature 1 K above selected value. Heating circuit pump switches back on when outside temperature 1 K below selected value.
	25	Delivered condition: Heating limit at outside temperature 25 °C
	10 to 35	Heating limit adjustable from 10 to 35 °C in 1 °C increments

Heating circuit 1, Heating circuit 2, Heating… (cont.)

1397.1 "Heating limit: Economy function, outside temperature, heating circuit 3"

Setting		Explanations
		Heating circuit pump logic function (summer economy control): Heating circuit pump switches off when outside temperature 1 K above selected value. Heating circuit pump switches back on when outside temperature 1 K below selected value.
25 °C	**25**	Delivered condition: Heating limit at outside temperature 25 °C
	10 to 35	Heating limit adjustable from 10 to 35 °C in 1 °C increments

Solar

Note
*Parameter values in **bold** are factory settings.*

950.0 "Flow rate, solar circuit at max. pump speed"

Setting		Explanations
7.0 l/min	**7**	Required for calculating the solar yield
0.1 to 25.5 l/min	0.1 to 25.5	Flow rate adjustable from 0.1 to 25.5 l/min 1 step ≙ 0.1 l/min

1125.0 "Maximum cylinder temperature for solar DHW heating"

Setting		Explanations
		Maximum temperature for solar heating of storage medium
60 °C	**60**	Factory setting: Set value 60 °C
	10 to 90	Set value adjustable from 10 to 90 °C ! **Please note** A high set value may incur a risk of scalding at the draw-off points. If required, take on-site action and inform the system user.

1126.0 "Minimum collector temperature"

Setting		Explanations
		Min. collector temperature for starting the solar circuit pump
10 °C	**10**	Factory setting: 10 °C
None	0	Minimum temperature limit disabled
	1 to 90	Minimum start temperature adjustable from 1 to 90 °C

1126.1 "Maximum collector temperature"

Setting		Explanations
130 °C	**130**	Maximum collector temperature (to protect system components) 130 °C
20 - 200 °C	20 to 200	Maximum collector temperature adjustable from 20 to 200 °C in 1 °C increments

Solar (cont.)

1127.0 "Frost protection function for solar circuit"

Setting		Explanations
		Frost protection function for the solar circuit:
Off	**0**	Not active
On	1	Enabled Not required for Viessmann heat transfer medium

1136.2 "Heat transfer medium, solar circuit"

Setting		Explanations
		Setting is required for calculating the solar yield
	0	Calculation of solar yield with water as heat transfer medium
	1	Calculation of solar yield with Viessmann heat transfer medium

1394.0 "DHW set temperature for reheating suppression"

Setting		Explanations
40 °C	**40**	DHW set temperature for reheating suppression. Above the selected set temperature reheating suppression is active.
	0 to 95	DHW set temperature adjustable from 0 to 95 °C

1492.0 "Start temperature differential, solar circuit pump"

Setting		Explanations
		Start temperature differential between the actual temperature of temperature sensor [5] and the actual temperature of collector temperature sensor [6]
8 K	**8**	Factory setting: 8 K
	2 to 30	Start temperature differential adjustable from 2 to 30 K

1492.1 "Stop temperature differential, solar circuit pump"

Setting		Explanations
		Stop temperature differential between the actual temperature of temperature sensor [5] and the actual temperature of collector temperature sensor [6]
4 K	**4**	Factory setting 4 K
	1 to 29	Stop temperature differential adjustable from 1 to 29 K

1505.0 "Stagnation time reduction"

Setting		Explanations
		Temperature differential between the actual temperature of the collector temperature sensor and the set maximum collector temperature. Reduction in the speed of the solar circuit pump to protect system components and heat transfer medium
5 K	**5**	Factory setting: 5 K
	0	Stagnation time reduction not active
	1 to 40	Temperature differential adjustable from 1 to 40 K

Solar (cont.)

1598.0 "Start temperature for thermostat function"

Setting		Explanations
50 °C	**50**	Only in conjunction with SDIO/SM1A electronics module
	0 to 100	Set start temperature adjustable from 0 to 100 °C

1598.1 "Stop temperature for thermostat function"

Setting		Explanations
40 °C	**40**	Only in conjunction with SDIO/SM1A electronics module
	0 to 100	Set stop temperature adjustable from 0 to 100 °C

1599.0 "Start temperature differential for central heating backup"

Setting		Explanations
8 K	**8**	Only in conjunction with SDIO/SM1A electronics module
	2 to 30	Start temperature differential adjustable from 2 to 30 K

1599.1 "Stop temperature differential for central heating backup"

Setting		Explanations
4 K	**4**	Only in conjunction with SDIO/SM1A electronics module
	1 to 29	Stop temperature differential adjustable from 1 to 29 K

Subscriber numbers of connected extensions

All extensions connected to the heat generator (except the SDIO/SM1A electronics module) must have a subscriber number. The subscriber number is set on rotary switch S1 at each extension.

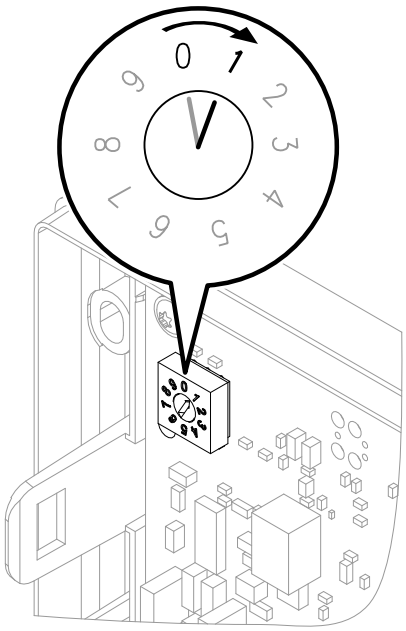

Fig. 48

Rotary switch S1 settings:

- EM-S1 extension (system with solar collectors): **0**
- EM-EA1 extension (max. 3 extensions in one system)
  Consecutive no. (any sequence): **1** up to **3**
- EM-P1 extension
  - If no heating circuits with mixer are available in the system: **1**
  - If heating circuits with mixer (EM-M1 or EM-MX extensions) are present in the system: Always set subscriber number for EM-P1 extension to the consecutive number after EM-M1 or EM-MX extensions.
- EM-M1 or EM-MX extensions
  - Heating circuit 2 with mixer: Rotary switch on extension kit to 1
  - Heating circuit 3 with mixer: Rotary switch on extension kit to 2

Note

*EM-EA1 extensions may have the same subscriber number as the EM-P1, EM-M1 or EM-MX extensions. The following table shows an **example** of how a system may be equipped.*

Subscriber numbers of connected extensions (cont.)

Function	Electronics module	Extension	Setting Rotary switch S1
System with solar collectors	ADIO	EM-S1	**0**
Heating circuit 2 with mixer	ADIO	EM-M1/EM-MX	**1**
Heating circuit 3 with mixer	ADIO	EM-M1/EM-MX	**2**
Heating circuit 1 without mixer (circulation pump downstream of low loss header)	ADIO	EM-P1	**3**
Function extensions (e.g.): ▪ Fault message input ▪ Fault message output ▪ Operating mode changeover	DIO	EM-EA1	**1**
	DIO	EM-EA1	**2**
	DIO	EM-EA1	**3**

Service menu

Calling up the service menu

Tap the following buttons:

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. Select the required menu section.

   Note
   Not all menu areas will be available, depending on the system equipment level.

Note
Tap "☰" to return to ***"Service, main menu"***

Service menu overview

Service	
Active messages	
Reset service messages	
Connect to app	
Diagnosis	
	General
	Heating circuit 1
	Heating circuit 2
	Heating circuit 3
	DHW
	Solar
	WiFi
Actuator test	
System configuration	
Message history	
Basic settings	
	Factory settings
	Commissioning assistant
Appliances detected	
Exit trade fair mode	

Exiting the service menu

Tap the following buttons:

"☰" for 4 s.

Note
The system exits the service menu automatically after 30 min.

Diagnosis

Checking operating data

Operating data can be checked in various areas. See **"Diagnosis"** in the service menu overview.

Operating data on heating circuits with mixer can only be called up if such components are installed in the system.

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Diagnosis (cont.)

Note
*If a called up sensor is faulty, **"- - -"** appears on the display.*

Calling up operating data

Tap the following buttons:

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. Use ∧/∨ to select **"Diagnosis"**.
3. **OK**
4. Use ∧/∨ to select the required group.
5. **OK**
6. Select the required information with ∧/∨.

Checking outputs (actuator test)

Note
When the actuator test is started, all actuators are initially disabled and valves moved to their central position.

Tap the following buttons:

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. **"Actuator test"**
3. **OK**
4. **OK** to confirm the message.
5. Use ∧/∨ to select the required group.
6. **OK**
7. Use ∧/∨ to select the actuator. See the table below.
8. **OK**
9. ∧/∨ for the required value.
10. **OK**

    Note
    The function is active for 30 min.
11. Use ☰ to end the Actuator test.

The following actuator functions can be controlled subject to the system equipment level:

Display		Explanation
Boiler group		
Fan speed	Set value	Burner fan speed in rpm (rotations/minute)
Burner modulation, set value	▪ Off ▪ Minimum heating output ▪ Maximum heating output ▪ Maximum DHW output	Modulation level (in accordance with specific heat generator settings)
3-way valve target position	Heating	Diverter valve set to heating mode
	Middle	Diverter valve in central position (filling/draining)
	DHW	Diverter valve set to DHW heating
Heating group		
Primary circuit pump speed	Set value	Internal circulation pump speed in %
3-way valve target position	Heating	Diverter valve set to heating mode
	Middle	Diverter valve in central position (filling/draining)
	DHW	Diverter valve set to DHW heating
Heating circuit pump 1 speed	Set value	Speed, heating circuit pump, heating circuit 1 without mixer in %

Checking outputs (actuator test) (cont.)

Display		Explanation
Heating circuit pump 2 speed	Set value	Speed, heating circuit pump, heating circuit 2 with mixer in %
Heating circuit pump 3 speed	Set value	Speed, heating circuit pump, heating circuit 3 with mixer in %
Mixer, heating circuit 2	Open	Output for "Mixer open" enabled (mixer extension kit)
	Stop	Current position is maintained
	Close	Output for "Mixer close" enabled
Mixer, heating circuit 3	Open	Output for "Mixer open" enabled (mixer extension kit)
	Stop	Current position is maintained
	Close	Output for "Mixer close" enabled
DHW group (domestic hot water)		
Primary circuit pump, set speed	Set value	Internal circulation pump in %
3-way valve target position	Heating	Diverter valve set to heating mode
	Middle	Diverter valve in central position (filling/draining)
	DHW	Diverter valve set to DHW heating
Cylinder loading pump	On	
	Off	
DHW circulation pump	On	
	Off	
Transfer pump hygiene function	On	
	Off	
Circulation pump for cylinder heating	On	
	Off	
Solar group		
Solar circuit pump, set speed	Set value	Speed, solar circuit pump in %
Transfer pump hygiene function	On	
	Off	
Solar circulation pump	On	
	Off	
Solar 3-way valve, target position	Open	
	Close	
	Stop	

Fault display on the programming unit

Fault display on the programming unit

If there is a fault, the display shows **"Burner fault"** or **"Active messages"**.

Note
If a central fault message facility is connected, this is switched on.

If "Connection error" appears on the display:
Check connecting cable and plug between HMU heat management unit and HMI programming unit.

Calling up fault messages

Tap the following buttons:

1. "☰"
2. ∧/∨ for:
   - **"Details"** if burner faults are present
   - **"Active messages"** if further faults are present
3. **OK**
4. ∧/∨ for **"Error"** to display all fault messages.
5. **OK**
6. ∧/∨ for the required message
   For an explanation of the fault codes, see the following table.
7. **OK**
8. "☰" for **"Error"**
9. ∧/∨ to call up further messages

Acknowledging the fault display

1. "☰"
2. ∧/∨ for **"Active messages"**
3. **OK**
4. ∧/∨ for **"Error"** to display all fault messages.
5. **OK**
6. ∧/∨ for **"Acknowledge"** to acknowledge all fault messages.

   Note
   Service messages are also acknowledged.

Note
Any connected central fault message facility is switched off.
If an acknowledged fault is not remedied, the fault message will be redisplayed the following day at 07:00 h, and the fault message facility restarts.

Calling up acknowledged fault messages

Tap the following buttons:

1. "☰"
2. ∧/∨ for **"Active messages"**.
3. **OK**
4. ∧/∨ for **"Error"**
5. **OK**

   Note
   When troubleshooting, always observe the subscriber number of the component.
   Check the component displayed, rectify the fault if required. The subscriber number of the component depends on the rotary switch position of the corresponding extension module. The rotary switch position was set during installation.
   To identify the affected module, check the rotary switch position on the module if necessary.

The following is displayed:
- Date and time of the occurrence of the fault
- Fault number
- Description of the fault
- Subscriber number of the component on which the fault has occurred:

  PlusBus subscriber components
  0 EM-S1 extension (ADIO electronics module)
  1 - 15 EM-M1, EM-MX and EM-P1 extensions (ADIO electronics module)
  17 - 31 EM-EA1 extension (DIO electronics module)
  32 - 47 Cylinder module, EM-M2, EM-S2 extensions (M2IO electronics module)
  49 - 63 Vitotrol 200-E
  64 SDIO/SM1A electronics module
  CAN BUS subscriber components
  1 HMU heat management unit
  50 BCU burner control unit
  58 RF module (wireless module)
  59 HMI programming unit
  60 Fan unit
  90 Gateway
  Low power radio subscriber components
  48 - 63 Vitotrol 300-E

Fault display on the programming unit (cont.)

Calling up fault messages from the fault memory (message history)

The 10 most recent faults (including those remedied) and service messages are saved and can be called up.
Faults are sorted by date.

Tap the following buttons:

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. ∧/∨ for **"Message history"**
3. **OK**
4. Use ∧/∨ to select the required category.
   - **"Faults"** to call up saved fault messages.
   - **"Service messages"** to call up saved service messages.
     P.1 Interval until the next service
     P.8 Service due in burner hours run
   - **"Status"**, to call up the saved status messages.
     S.60 Summer mode active (exterior temperature savings function)
     S.74 Heating suppression, heating
     S.75 DHW circulation pump active
   - **"Warnings"** to call up saved warning messages.
     A.12 Real time clock battery flat
     Measure: Replace the battery of the HMU heat management unit.
     A.18 Possible condensate backup in the heat cell
     Measure: Check the combustion chamber and condensation drain.
     A.20 Service interval could not be activated.
     Measure: Check the time and date settings.
   - **"Information"**, to call up saved service information.
     I.56 External demand active
     I.57 External blocking active
     I.59 Parameters have been restored (parameter set was flashed to the BCU electronics module).
5. **OK**
6. ∧/∨ for the required message
7. **OK**

Deleting messages

1. ☰ and **OK** – press simultaneously for approx. 4 s, then release.
2. **"Message history"**
3. **OK**
4. Use ∧/∨ to select **"Delete messages"**.
5. **OK**
6. **OK** to confirm the message.

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Overview of electronics module

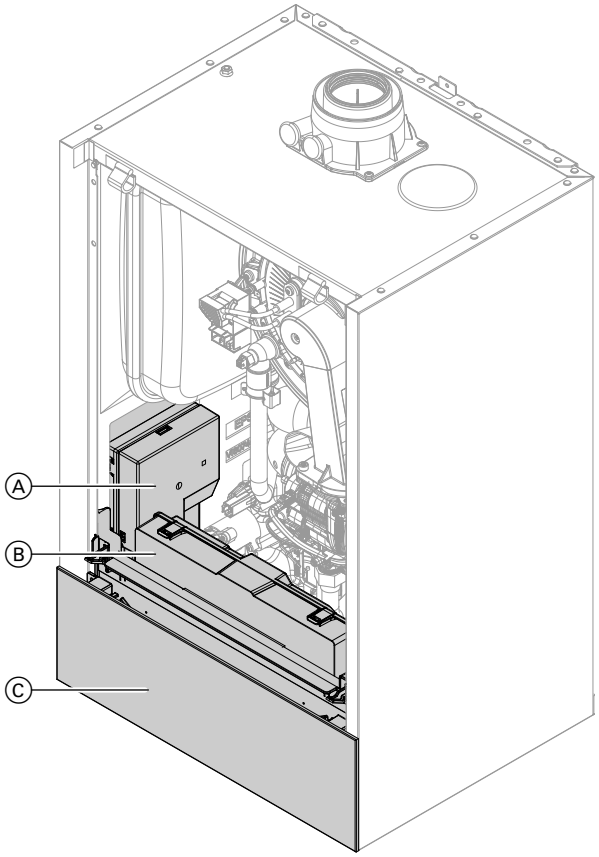


Fig. 49

Ⓐ BCU burner control unit
Ⓑ HMU heat management unit
Ⓒ HMI programming unit with RF module

Fault messages

Fault number on the display	System characteristics	Cause	Measures
F.7	No DHW heating	Lead break, cylinder temperature sensor	Check cylinder temperature sensor. See page 99.
F.8	No DHW heating	Short circuit, cylinder temperature sensor	Check cylinder temperature sensor. See page 99.
F.9	No DHW heating	Lead break, DHW outlet temperature sensor	Check the DHW outlet temperature sensor. See page 99.
F.10	No DHW heating	Short circuit, DHW outlet temperature sensor	Check the DHW outlet temperature sensor. See page 99.
F.11	No solar DHW heating or central heating backup	Lead break, collector temperature sensor	Check collector temperature sensor TS2 on extension EM-S1 (ADIO electronics module). See page 101.
F.12	No solar DHW heating or central heating backup	Short circuit, collector temperature sensor	Check collector temperature sensor TS2 on extension EM-S1 (ADIO electronics module). See page 101.
F.13	Regulates as if the outside temperature were 0 °C.	Lead break, outside temperature sensor	Check outside temperature sensor. See page 99.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.14	Regulates as if the outside temperature were 0 °C.	Short circuit, outside temperature sensor	Check outside temperature sensor. See page 99.
F.15	No solar DHW heating or central heating backup	Lead break, cylinder temperature sensor	Check cylinder temperature sensor TS1 on extension EM-S1 (ADIO electronics module). See page 101.
F.16	No solar DHW heating or central heating backup	Short circuit, cylinder temperature sensor	Check cylinder temperature sensor TS1 on extension EM-S1 (ADIO electronics module). See page 101.
F.29	Regulates without flow temperature sensor for low loss header.	Lead break, low loss header sensor	Check the low loss header sensor. See page 99.
F.30	Regulates without flow temperature sensor for low loss header.	Short circuit, low loss header sensor	Check the low loss header sensor. See page 99.
F.49	Burner in a fault state	Lead break, flue gas temperature sensor	Check flue gas temperature sensor. See page 99. Reset device.
F.50	Burner in a fault state	Short circuit, flue gas temperature sensor	Check flue gas temperature sensor. See page 99. Reset device.
F.55	Burner in a fault state	Lead break, CO sensor	Check CO sensor. Reset device.
F.56	Burner in a fault state	Short circuit, CO sensor	Check CO sensor. Reset device.
F.57	Control mode without room influence	Lead break, room temperature sensor	Check external room temperature sensor of the affected heating circuit or room temperature sensor of remote control unit.
F.58	Control mode without room influence	Short circuit, room temperature sensor	Check external room temperature sensor of the affected heating circuit or room temperature sensor of remote control unit.
F.59	Burner blocked	Power supply, low voltage	Check the power supply.
F.62	Burner in a fault state	High limit safety cut-out has responded.	Check heating system fill level. Check circulation pump. Vent the system. Reset device.
F.63	Burner in a fault state	Flue gas temperature limiter has responded.	Check heating system fill level. Vent the system. Unlock the appliance once the flue system has cooled down.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.65	Burner starts again	Flame signal is not present or insufficient at burner start.	Check gas supply (gas pressure and gas flow switch). Check the gas train and connecting cables. Check system for condensate backup. Check condensate drain. ***Note*** *To prevent water damage, detach fan unit before removing the burner.* Check the ionisation electrode and connecting cable: ▪ Distance to burner gauze assembly (see page 50) ▪ Contamination on electrode Check ignition: ▪ Connecting cables to ignition module and ignition electrode ▪ Ignition electrode clearance and contamination. See page 50. ▪ Check ignition electrode for broken ceramic.
F.67	Burner in a fault state	Ionisation current lies outside the permissible range	Check gas supply (gas pressure and gas flow switch). Check the fan unit connecting cables. Check ionisation electrode for the following: ▪ Distance to burner gauze assembly (see page 50) ▪ Contamination on electrode Reset device.
F.68	Burner in a fault state	Flame signal is already present at burner start.	Check ionisation electrode and connecting cable. Reset device.
F.69	Burner in a fault state	Ionisation current lies outside the permissible range	Check ionisation electrode and connecting cable. Reset device.
F.70	Burner in a fault state	Internal burner control unit fault	Reset device.
F.71	Burner in a fault state	Fan speed too low	Check fan for blockage. Reset device.
F.72	Burner in a fault state	Fan idle state not reached	Check draught in flue system. Check the fan. Check the fan connecting cables. Check the fan control. Reset device.
F.73	Burner in a fault state	Internal communication error	Check CAN bus connection and cables. Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.74	Burner blocked. Internal circulation pump off. No central heating and no DHW heating.	System pressure too low	Top up with water.
F.77	Burner in a fault state	Data memory burner control unit	Check software version. Flash new version if necessary. Reset device.
F.89	No central heating and no DHW heating.	Internal pump blocked	Check pump and replace if necessary.
F.91	Function of affected extension in emergency mode.	DIO electronics module communication error	Check connections on DIO electronics module and connection to HMU heat management unit. Check setting of rotary switch S1 on electronics module (subscriber no.). See page 72.
F.92	Function of affected extension in emergency mode	ADIO electronics module communication error	Check connections and cables between ADIO electronics module and HMU heat management unit. Check setting of rotary switch S1 on electronics module (subscriber no.). See page 72.
F.93	Function of affected extension in emergency mode.	M2IO electronics module communication error	Check connections on M2IO electronics module and connection to HMU heat management unit. Check setting of rotary switch S1 on electronics module (subscriber no.). See page 72.
F.94	No solar DHW heating or central heating backup Reheating suppression disabled.	SDIO/SM1A electronics module communication error	Check connections on SDIO/SM1A electronics module and connection to HMU heat management unit.
F.100	Connected electronics module functions in emergency mode.	Voltage error PlusBus	Check the PlusBus connecting cable. Check the number of connected PlusBus subscribers. See page 24.
F.104	Depending on configuration of EM-EA1 extension (electronics module DIO)	External fault message input active	Check connected external device.
F.142	Burner in a fault state	Communication error, fan unit	Check the fan unit connecting cable. Reset device.
F.160	Control mode	No communication via CAN BUS to connected electronics modules	Check HMU heat management unit connections. Reset device.
F.161	Burner in a fault state	Data memory access error	Turn the appliance off and on again. Reset device.
F.162	Burner in a fault state	Processor low voltage	Turn the appliance off and on again. Check the connecting cable. Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.163	Burner in a fault state	Memory access checksum error	Turn the appliance off and on again. Reset device.
F.182	No DHW heating	Short circuit, outlet temperature sensor	Check outlet temperature sensor (see page 99).
F.183	No DHW heating	Lead break, outlet temperature sensor	Check outlet temperature sensor (see page 99).
F.184	Burner in a fault state	Short circuit, flow temperature sensor/high limit safety cut-out	Check flow temperature sensor/ high limit safety cut-out (see page 99). Reset device.
F.185	Burner in a fault state	Lead break, flow temperature sensor/high limit safety cut-out	Check flow temperature sensor/ high limit safety cut-out (see page 99). Reset device.
F.299	Wrong time	Real-time clock fault	Set the time.
F.342	Burner in a fault state	Communication error, BCU burner control unit	Check the connecting cable to the BCU burner control unit. Reset device.
F.345	Burner blocked	Temperature limiter has responded	Ensure adequate heat transfer.
F.346	Burner in a fault state	Ionisation current calibration error	▪ Check the gas supply pressure. Check gas train strainer on the inlet side for contamination. ▪ Check ionisation electrode for contamination. Check gap between ionisation electrode and burner gauze assembly (see page 50). Reset device. ▪ Check flue system; remove flue gas recirculation if required. ▪ Check the connecting cable to the fan unit. ▪ Check impeller for ease of operation. Reset device.
F.348	Burner in a fault state	Gas modulation valve	Check connecting cables to the gas train for damage. Check the flue system for flue gas back pressure. Check gas train. Reset device.
F.349	Control mode Burner is operating with a limited modulation range.	Air mass rate flow not detected correctly in fan unit.	Check the flue system for flue gas back pressure.
F.350	Burner in a fault state	Ionisation voltage lies outside the permissible range	Check ionisation electrode and connecting cable. Reset device.
F.351	Burner in a fault state	Ionisation current lies outside the permissible range	Check ionisation electrode and connecting cable. Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.352	Burner in a fault state	CO limit within appliance exceeded	Check entire flue gas path for the following: ▪ Flue gas recirculation ▪ Leaks ▪ Flue gas back pressure caused by water pocket (if flue system fall is insufficient) ▪ Constrictions ▪ Blockages Repair flue system if necessary. Reset device.
F.353	Burner blocked	Insufficient gas supply, burner output reduced	Check the gas supply. Optically check input-side screen in the gas train for contamination. Reset device.
F.354	Burner in a fault state	Gas modulation valve tolerance outside permissible range	Check connecting cables to the gas train for damage. Check gas train. Check the flue system for blockages or constrictions. Reset device.
F.355	Burner in a fault state	Analogue signal reference check: Flame signal is already present at burner start.	Check system for condensate backup. ***Note*** *To prevent water damage, detach fan unit before removing the burner.* Reset device.
F.357	Burner in a fault state	Insufficient gas supply	Check that the gas shut-off valve is open. Optically check input-side screen in the gas train for contamination. Test static gas pressure and gas flow pressure. Check that on-site gas line and gas flow switch are correctly sized. ***Note*** *If the building pressure regulator has a leak, you may notice rising pressure when the burner is idle. When the system is restarted, the gas flow switch may trip.* Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.359	Burner in a fault state	No ignition spark	Check connection cables and leads from ignition module and ignition electrode. Check for a voltage of 230 V at the ignition module during the ignition phase. Check whether the ignition electrode insulation is damaged. Reset device.
F.361	Burner in a fault state	Flame signal is not present or insufficient at burner start.	Check ionisation electrode and connecting cable. Check plug-in connections for loose contacts. ***Note*** *Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).* Reset device.
F.365	Burner in a fault state	Relay contact gas valve feedback implausible	Reset device.
F.366	Burner in a fault state	Gas valve electricity supply does not turn off.	Reset device.
F.367	Burner in a fault state	Gas valve electricity supply does not turn off.	Reset device.
F.368	Burner blocked	Gas pressure switch fault. Forced ventilation time expired.	▪ Check gas supply (gas pressure). ▪ If installed: Check gas pressure switch for correct function. If necessary, disconnect the gas pressure switch connector and check whether the burner starts.
F.369	Burner in a fault state	Flame is lost immediately after flame formation (during safety time).	Check gas supply (gas pressure and gas flow switch). Check balanced flue system for flue gas recirculation. Check ionisation electrode for the following: ▪ Distance to burner gauze assembly (see page 50) ▪ Contamination on electrode Reset device.
F.370	Burner in a fault state	Fuel valve or modulation valve will not close.	Check the fuel valve, modulation valve and connecting cables. Replace the fan unit if necessary. Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.371	Burner in a fault state	Fan speed too low	Check the fan. Check the fan connecting cables. Check the fan power supply. Reset device.
F.372	Burner in a fault state	Repeated flame loss during calibration	Check ionisation electrode and connecting cable. Check the plug-in connections. Check flue system; remove flue gas recirculation if required. Check system for condensate backup. Visually inspect gas train inlet and strainer on the inlet side for contamination. ***Note*** *To prevent water damage, detach fan unit before removing the burner.* ***Note*** *Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).* *If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.* Reset device.
F.373	Burner in a fault state	Heat transfer too low during calibration Temperature limiter has shut down.	Ensure adequate heat transfer. Check circulation pump for faults, scale or blockages. Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.375	Burner in a fault state	Performing ionisation current calibration: Calibration not performed. Minimum value or termination criterion not reached.	Check ionisation electrode and connecting cable. Check plug-in connections for loose contacts. Check flue system; remove flue gas recirculation if required. Check system for condensate backup. Visually inspect gas train inlet and strainer on the inlet side for contamination. ***Note*** *To prevent water damage, detach fan unit before removing the burner.* ***Note*** *Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).* *If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.* Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.377	Burner in a fault state	Post-processing ionisation current calibration: Stabilisation conditions for post-calibration not reached	Check ionisation electrode and connecting cable. Check plug-in connections for loose contacts. Check flue system; remove flue gas recirculation if required. Check system for condensate backup. Visually inspect gas train inlet and strainer on the inlet side for contamination. ***Note*** *To prevent water damage, detach fan unit before removing the burner.* ***Note*** *Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).* *If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.* Reset device.
F.378	Burner in a fault state	Flame loss in the stabilisation or operating phase	▪ Check gas supply (gas pressure and gas flow switch). ▪ Check gas train. ▪ Check system for condensate backup. ***Note*** *To prevent water damage, detach fan unit before removing the burner.* ▪ Check ionisation electrode and connecting cable. Check ignition: ▪ Connecting cables to ignition module and ignition electrode ▪ Ignition electrode clearance and contamination. See page 50. ▪ Check ignition electrode for broken ceramic. Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.380	Burner in a fault state	Flame is lost immediately after flame formation (during safety time).	Check gas supply (gas pressure and gas flow switch). Check balanced flue system for flue gas recirculation. Check ionisation electrode for the following: ▪ Distance to burner gauze assembly (see page 50) ▪ Contamination on electrode Reset device.
F.381	Burner in a fault state	Flame loss in the stabilisation or operating phase	Check gas supply (gas pressure and gas flow switch). Check balanced flue system for flue gas recirculation. Check ionisation electrode for the following: ▪ Distance to burner gauze assembly (see page 50) ▪ Contamination on electrode Reset device.
F.382	Burner in a fault state	Fault counter has exceeded limit	Reset device.
F.383	Burner in a fault state	Gas valve does not close.	Check gas train; replace fan unit if necessary. Reset device.
F.384	Burner in a fault state	Gas valve does not close.	Check gas train; replace fan unit if necessary. Reset device.
F.385	Burner in a fault state	Short circuit, signal 1, ionisation current	Check ionisation electrode and connecting cable. Reset device.
F.386	Burner in a fault state	Lead break, signal 1, ionisation current	Check ionisation electrode and connecting cable. Reset device.
F.387	Burner in a fault state	Short circuit, signal 2, ionisation current	Check ionisation electrode and connecting cable. Reset device.
F.388	Burner in a fault state	Lead break, signal 2, ionisation current	Check ionisation electrode and connecting cable. Reset device.
F.395	Burner in a fault state	Short circuit, flame temperature signal 1	Check ionisation electrode and connecting cable. Reset device.
F.396	Burner in a fault state	Lead break, flame temperature signal 1	Check ionisation electrode and connecting cable. Reset device.
F.399	Burner in a fault state	Short circuit, ionisation voltage, signal 1	Check ionisation electrode and connecting cable. Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.400	Burner in a fault state	Lead break, ionisation voltage, signal 1	Check ionisation electrode and connecting cable. Reset device.
F.401	Burner in a fault state	Short circuit, ionisation voltage, signal 2	Check ionisation electrode and connecting cable. Reset device.
F.402	Burner in a fault state	Lead break, ionisation voltage, signal 2	Check ionisation electrode and connecting cable. Reset device.
F.403	Burner in a fault state	Short circuit, dynamic ionisation current, signal 1	Check ionisation electrode and connecting cable. Reset device.
F.404	Burner in a fault state	Lead break, dynamic ionisation current, signal 1	Check ionisation electrode and connecting cable. Reset device.
F.405	Burner in a fault state	Short circuit, dynamic ionisation current, signal 2	Check ionisation electrode and connecting cable. Reset device.
F.406	Burner in a fault state	Lead break, dynamic ionisation current, signal 2	Check ionisation electrode and connecting cable. Reset device.
F.407	Burner in a fault state	Safety chain	Check heating system fill level. Check circulation pump. Vent the system. Reset device.
F.408	Burner in a fault state	Gas valve monitoring relay 1 has responded	Reset device.
F.410	Burner in a fault state	Internal error, processor, BCU burner control unit	Reset device.
F.416	Burner blocked	Flue gas temperature sensor incorrectly positioned	Fit flue gas temperature sensor correctly. See "Repairs".
F.417	Burner in a fault state	Short circuit, 24 V power supply	Check connecting cable and supply voltage to the BCU burner control unit. Reset device.
F.418	Burner blocked	Lead break, 24 V power supply	Check connecting cable and supply voltage to the BCU burner control unit. Reset device.
F.425	System in control mode, calculation out of operation	Time synchronisation failed.	Set the time. If external time is used, check parameters 1504 and 508.
F.426	Burner in a fault state	Short circuit, external unlock signal	Check the connection to the HMU heat management unit. Reset device.
F.427	Burner in a fault state	Lead break, external unlock signal	Check the connection to HMU heat management unit. Reset device.
F.428	Control mode	Short circuit, air mass sensor, fan unit	Check connecting cable and plug-in connector.
F.429	Control mode	Lead break, air mass sensor, fan unit	Check connecting cable and plug-in connector.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.430	Connection of automation modules not possible	Communication error, gateway	Check gateway module connecting cable and power supply.
F.432	Burner blocked if fault occurs multiple times.	Short circuit, fan speed signal	Check ventilation air supply; clean if necessary. Check the fan and connecting cable.
F.433	Burner blocked if fault occurs multiple times.	Lead break, fan speed signal	Check ventilation air supply; clean if necessary. Check the fan and connecting cable.
F.436	Control mode	Short circuit, flow sensor	Check flow sensor.
F.437	Control mode	Lead break, flow sensor	Check flow sensor.
F.440	Burner blocked	Short circuit gas pressure switch on EM-EA1 extension (electronics module DIO)	Check gas pressure switch connection at EM-EA1 extension (DIO electronics module).
F.441	Burner blocked	Lead break gas pressure switch on EM-EA1 extension (electronics module DIO)	Check gas pressure switch connection at EM-EA1 extension (DIO electronics module).
F.442	Burner blocked	Short circuit signal, flue gas damper at EM-EA1 extension (DIO electronics module)	Check flue gas damper connection at EM-EA1 extension (DIO electronics module).
F.443	Burner blocked	Lead break signal, flue gas damper connection at EM-EA1 extension (DIO electronics module)	Check flue gas damper connection at EM-EA1 extension (DIO electronics module).
F.444	Burner blocked	Short circuit, LPG safety valve (solenoid valve) signal at EM-EA1 extension (DIO electronics module)	Check solenoid valve connection at EM-EA1 extension (DIO electronics module).
F.445	Burner blocked	Lead break, LPG safety valve (solenoid valve) signal at EM-EA1 extension (DIO electronics module)	Check solenoid valve connection at EM-EA1 extension (DIO electronics module).
F.446	Burner in a fault state	Deviation, flow temperature sensor/high limit safety cut-out, heat generator	Check the flow temperature sensor/high limit safety cut-out. See page 99. Reset device.
F.447	Burner in a fault state	Deviation, ionisation voltage signal	Check ionisation electrode. Reset device.
F.448	Burner in a fault state	Deviation, ionisation current signal	Check ionisation electrode. Reset device.
F.449	Burner in a fault state	Error in scheduled program run monitoring	Reset device.
F.450	Burner in a fault state	Error in scheduled program run monitoring	Reset device.
F.451	Burner in a fault state	Error in scheduled program run monitoring	Reset device.
F.452	Burner in a fault state	Error in scheduled program run monitoring	Reset device.
F.453	Burner in a fault state	Synchronisation error, sequence	Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.454	Burner in a fault state	Incorrect software version	Flash the correct software version for the BCU burner control unit.
F.455	Burner in a fault state	Error in logical program run monitoring	Reset device.
F.456	Burner in a fault state	System status at system start	Reset device.
F.457	Burner in a fault state	Fan blocked	Check free movement of the impeller. Replace the fan unit if required. Reset device.
F.458	Burner blocked	Internal error	Restart the heat generator. If necessary, reset the appliance.
F.461	Burner in a fault state	Feedback signal of flue gas damper connection at EM-EA1 extension input (DIO electronics module) preventing burner start.	Check flue gas damper connection at EM-EA1 extension (DIO electronics module). Reset device.
F.462	Burner in a fault state	LPG safety valve (solenoid valve) at EM-EA1 extension does not open (DIO electronics module).	Check solenoid valve connection at EM-EA1 extension (DIO electronics module). Reset device.
F.463	Burner in a fault state	Ionisation current too low during calibration	Check ionisation electrode and connecting cable. Check plug-in connections for loose contacts. Heat generator installation and service instructions Check flue system; remove flue gas recirculation if required. Reset burner. ***Note*** *Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).* *If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension. Reset device.*

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.464	Burner in a fault state	Ionisation current too low during calibration. Difference compared to previous value not plausible.	Check ionisation electrode and connecting cable. Check plug-in connections for loose contacts. Check whether there is a lot of dust in the ventilation air (e.g. from construction work). Check flue system; remove flue gas recirculation if required. Check system for condensate backup. ***Note*** *To prevent water damage, detach fan unit before removing the burner.* Replace burner control unit if fault is permanent. ***Note*** *Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).* *If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.* Reset device.
F.467	Burner in a fault state	Gas supply insufficient during calibration	Test static gas pressure and gas flow pressure. Check that on-site gas line and gas flow switch are correctly sized. Visually inspect gas train inlet and strainer on the inlet side for contamination. ***Note*** *Contamination from a brazed gas line, for example, can block up the gas train strainer on the inlet side.* Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.468	Burner in a fault state	Ionisation current too high during calibration	Check gap between ionisation electrode and burner gauze assembly. See page 50. Check whether there is a lot of dust in the ventilation air (e.g. from construction work). ***Note*** *Deposits on the electrodes indicate foreign bodies in the ventilation air. Check the installation room and flue system for causes of the deposits. For example: Laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).* *If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.* Reset device.
F.471	No heat demand	System pressure sensor not available	Check the system pressure sensor.
F.473	No heat demand	HMU heat management unit communication error	Check connecting cable between burner control unit and HMU heat management unit.
F.474	Burner in a fault state	Error in scheduled program run monitoring	Reset device.
F.517	Control mode, remote control unit not functioning	Communication error, Vitotrol wired remote control	Check the remote control unit connecting cable and configuration
F.527	Burner blocked	Update parameters faulty or incomplete	Repeat BCU burner control unit flash operation.
F.528	Burner blocked	Basic programming faulty or incomplete	Repeat BCU burner control unit flash operation.
F.530	Solar function limited	Values not provided by the temperature sensors	Check the temperature sensors.
F.538	No solar central heating backup	Lead break, system return temperature sensor	Check the temperature sensor.
F.539	No solar central heating backup	Short circuit, system return temperature sensor	Check the temperature sensor.
F.540	Burner in a fault state	Condensate backup in the heat cell	Check system for condensate backup. Check the condensate drain and trap. ***Note*** *To prevent water damage, detach fan unit before removing the burner.* Reset device.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.542	Mixer closes. Heating circuit pump is operational.	Lead break, flow temperature sensor, heating circuit 1 with mixer	Check flow temperature sensor TS1 on extension kit mixer (ADIO electronics module). See page 99.
F.543	Mixer closes. Heating circuit pump is operational.	Short circuit, flow temperature sensor for heating circuit 1 with mixer	Check flow temperature sensor TS1 on extension kit mixer (ADIO electronics module). See page 99.
F.544	Mixer closes. Heating circuit pump is operational.	Lead break, flow temperature sensor, heating circuit 2 with mixer	Check flow temperature sensor TS1 on extension kit mixer (ADIO electronics module). See page 99.
F.545	Mixer closes. Heating circuit pump is operational.	Short circuit, flow temperature sensor for heating circuit 2 with mixer	Check flow temperature sensor TS1 on extension kit mixer (ADIO electronics module). See page 99.
F.546	Mixer closes. Heating circuit pump is operational.	Lead break, flow temperature sensor, heating circuit 3 with mixer	Check flow temperature sensor TS1 on extension kit mixer (ADIO electronics module). See page 99.
F.547	Mixer closes. Heating circuit pump is operational.	Short circuit, flow temperature sensor for heating circuit 3 with mixer	Check flow temperature sensor TS1 on extension kit mixer (ADIO electronics module). See page 99.
F.574	Control mode without room influence	Room temperature sensor for heating circuit 1 not available	Check external room temperature sensor for heating circuit or room temperature sensor for remote control unit.
F.575	Control mode without room influence	Lead break, room temperature sensor, heating circuit 1	Check external room temperature sensor for heating circuit or room temperature sensor for remote control unit.
F.576	Control mode without room influence	Short circuit, room temperature sensor, heating circuit 1	Check external room temperature sensor for heating circuit or room temperature sensor for remote control unit.
F.577	Control mode without room influence	Room temperature sensor for heating circuit 2 not available	Check external room temperature sensor for heating circuit or room temperature sensor for remote control unit.
F.578	Control mode without room influence	Lead break, room temperature sensor, heating circuit 2	Check external room temperature sensor for heating circuit or room temperature sensor for remote control unit.
F.579	Control mode without room influence	Short circuit, room temperature sensor, heating circuit 2	Check external room temperature sensor for heating circuit or room temperature sensor for remote control unit.
F.580	Control mode without room influence	Room temperature sensor for heating circuit 3 not available	Check external room temperature sensor for heating circuit or room temperature sensor for remote control unit.

Fault messages (cont.)

Fault number on the display	System characteristics	Cause	Measures
F.581	Control mode without room influence	Lead break, room temperature sensor, heating circuit 3	Check external room temperature sensor for heating circuit or room temperature sensor for remote control unit.
F.582	Control mode without room influence	Short circuit, room temperature sensor, heating circuit 3	Check external room temperature sensor for heating circuit or room temperature sensor for remote control unit.
F.666	Preheating of second DHW cylinder and solar transfer pump not working	Lead break, temperature sensor, DHW preheating TS3	Check temperature sensor TS3.
F.667	Preheating of second DHW cylinder and solar transfer pump not working	Short circuit, temperature sensor, DHW preheating TS3	Check temperature sensor TS3.
F.668	Preheating of second DHW cylinder and solar transfer pump not working	Lead break, temperature sensor, DHW reheating TS4	Check temperature sensor TS4.
F.669	Preheating of second DHW cylinder and solar transfer pump not working	Short circuit, temperature sensor, DHW reheating TS4	Check temperature sensor TS4.
F.670	No solar central heating backup	Lead break, buffer temperature sensor TS3	Check temperature sensor TS3.
F.671	No solar central heating backup	Short circuit, buffer temperature sensor TS3	Check temperature sensor TS3.
F.672	Thermostat function for solar control and solar transfer pump not working	Lead break, temperature sensor, thermostat function TS3	Check temperature sensor TS3.
F.673	Thermostat function for solar control and solar transfer pump not working	Short circuit, temperature sensor, thermostat function TS3	Check temperature sensor TS3.
F.682	Burner in a fault state	Air mass flow rate sensor not installed	Install the correct fan. Reset device.
F.683	Burner in a fault state	Air mass flow rate sensor faulty	Replace fan. Reset device.
F.684	Burner in a fault state	Back draught safety device faulty	Check the back draught safety device and replace if necessary. Reset device.

Repairs

Please note
Residual water will escape when the boiler or one of the following components is fitted or removed:
- Water-filled pipework
- Heat exchanger
- Circulation pumps
- Plate heat exchanger
- Components fitted in the heating water or DHW circuit.

Water ingress can result in damage to other components.

Protect the following components against ingress of water:
- Control unit components (especially in the service position)
- Electrical components
- Plug-in connections
- Cables and leads

Shutting down the boiler

1. Switch OFF the power supply.
2. Shut off the gas supply.
3. If the boiler needs to be removed:
   - Disconnect the balanced flue system.
   - Drain the boiler on the heating water and DHW sides.
   - Disconnect the on-site cables/leads.

Repairs (cont.)

Removing the boiler from the pre-plumbing jig or mounting frame

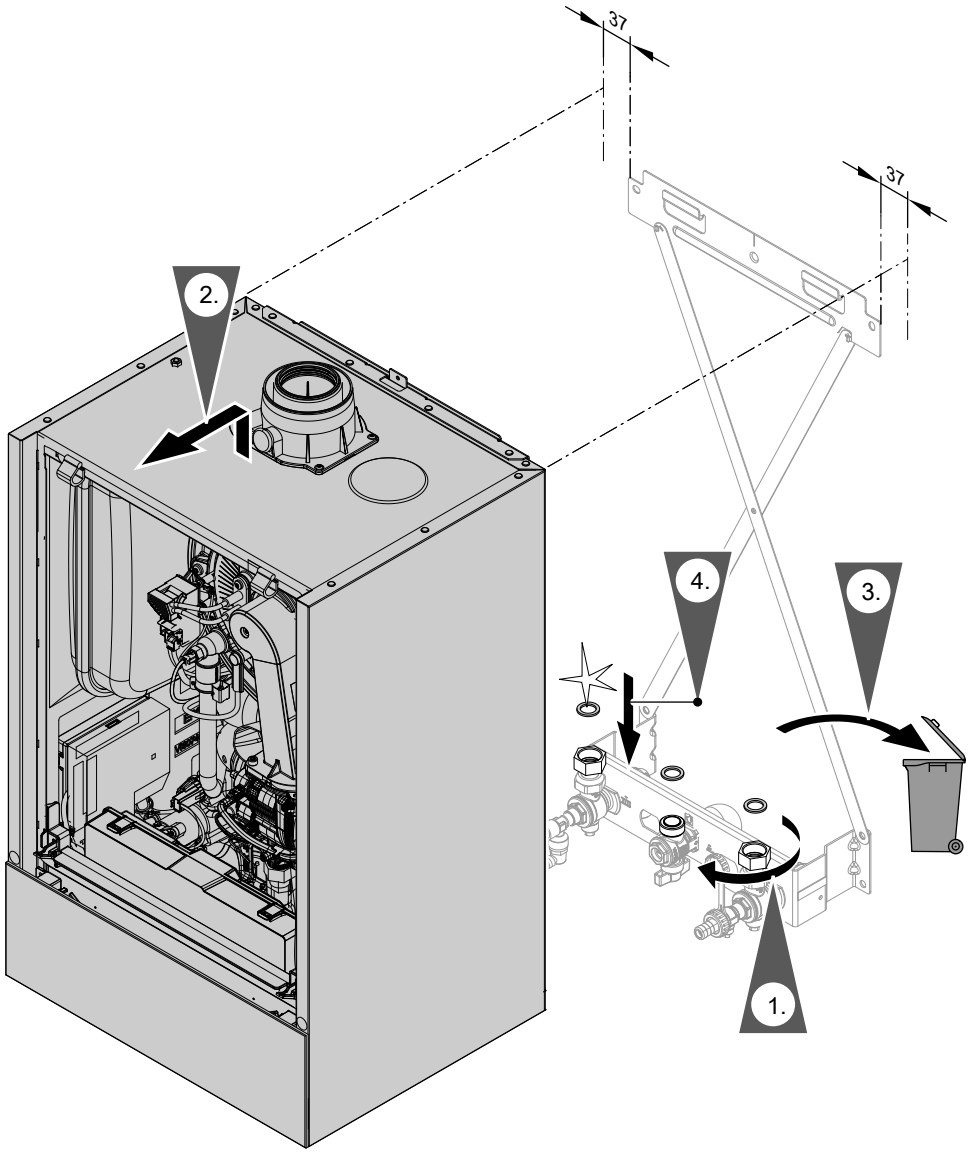


Fig. 50

Note
Use new gaskets and, if required, new locking ring connections when assembling.

Internal gasket diameter:
- *Gas connection Ø 18.5 mm*
- *Connections on the heating water side Ø 17.0 mm*

Gaskets and locking ring connections are available as spare parts (if required).

Note
When carrying out any work on gas connection fittings, counterhold with a suitable tool. Never transfer any forces to the internal components.

Danger
Escaping gas leads to a risk of explosion.
Check all connections on the gas side (also inside the appliance) for tightness.

Repairs (cont.)

Checking the temperature sensors

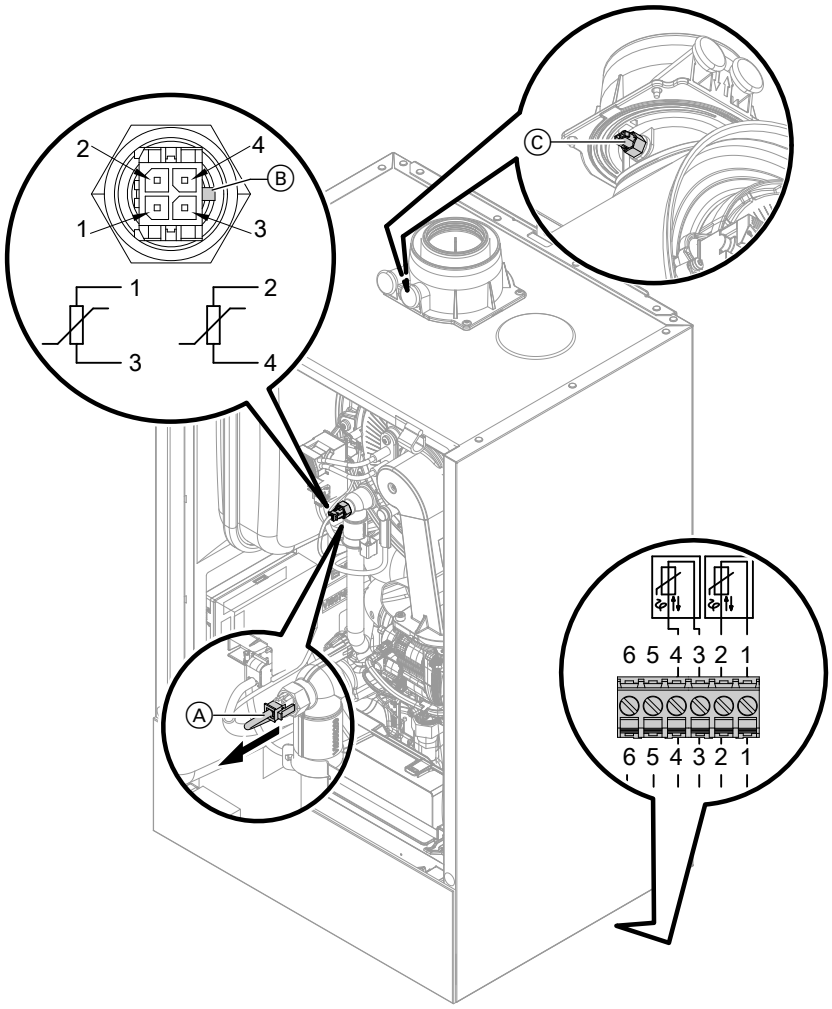


Fig. 51

Heat generator circuit flow temperature sensor (dual sensor)

1. Check the leads and plugs of flow temperature sensors Ⓐ.
2. Disconnect the leads from flow temperature sensors Ⓐ.
3. Check the sensor resistance. Note position of guide lug Ⓑ.
   - Sensor 1: Connections 1 and 3
   - Sensor 2: Connections 2 and 4

   Compare the resistances with the value for the current temperature from the following diagram. In the event of severe deviation (> 10 %), replace the dual sensor.

Danger
The dual sensor is directly immersed in the heating water (risk of scalding).
Drain the boiler on the heating water side before replacing the sensor.

Danger
Risk of electric shock from escaping heating water.
Check the dual sensor for leaks.

Repairs (cont.)

Cylinder temperature sensor/outlet temperature sensor

1. Check lead and plug of cylinder temperature sensor [5] or outlet temperature sensor [4].
2. Disconnect wires of sensor plug.
3. Check the sensor resistance. Compare the resistance with the value for the current temperature from the following diagram.
   In the event of severe deviation (> 10 %), replace the sensor.

Temperature sensor, low loss header

1. Check lead and plug of temperature sensor [9] on the ADIO electronics module (mixer extension kit).
2. Disconnect wires of sensor plug.
3. Check the sensor resistance. Compare the resistance with the value for the current temperature from the following diagram.
   In the event of severe deviation (> 10 %), replace the sensor.

Outside temperature sensor

1. Check the lead and plug of the outside temperature sensor.
2. Disconnect wires 1 and 2 from the external plug.
3. Check the sensor resistance. Compare the resistance with the value for the current temperature from the following diagram.
   If the results are very different from the curve (> 10 %), disconnect the wires from the sensor. Repeat the test directly on the sensor.
   Check the on-site lead. 2-core lead, length up to 35 m with a cross-section of 1.5 mm^2
   Depending on the test result, replace the lead or the outside temperature sensor.

Flue gas temperature sensor

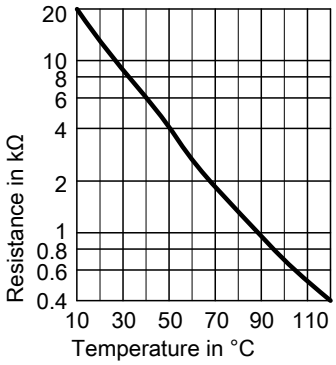
1. Check the lead and plug of flue gas temperature sensor Ⓒ.
2. Disconnect leads, flue gas temperature sensor Ⓒ.
3. Rotate sensor (anti-clockwise) by ¼ turn to remove it (bayonet fitting).
4. Check the sensor resistance. Compare the resistance with the value for the currently recorded temperature from the following diagram.
   In the event of severe deviation (> 10 %), replace the sensor.
5. Rotate sensor (clockwise) by ¼ turn to install it.

   ⚠ **Danger**
   Escaping flue gas can cause poisoning.
   When restarting, check for leaks on the flue gas side.

6. Reconnect leads, flue gas temperature sensor Ⓒ.
7. If the permissible flue gas temperature has been exceeded, the flue gas temperature sensor locks out the appliance. Reset the burner on the programming unit once the flue system has cooled down.

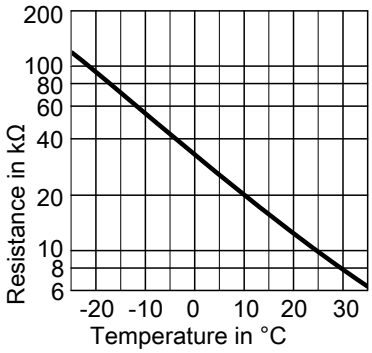
Repairs (cont.)

- **Flue gas temperature sensor**
- **Flow temperature sensor**
- **Cylinder temperature sensor**
- **Outlet temperature sensor**
- **Temperature sensor, low loss header**



Sensor type: NTC 10 kΩ

- **Outside temperature sensor**



Sensor type: NTC 10 kΩ

Check temperature sensors at EM-S1 extension (ADIO electronics module)

Check temperature sensors at SDIO/SM1A electronics module: Installation and service instructions of respective accessory.

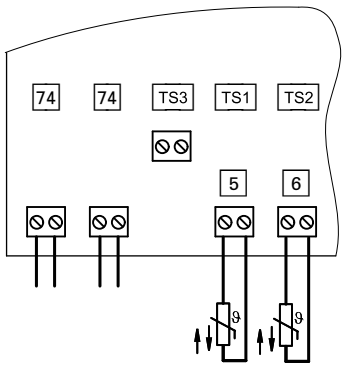


Fig. 52

Check cylinder temperature sensor

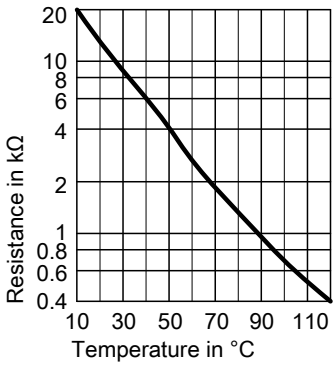


Fig. 53 Sensor type: NTC 10 kΩ

1. Disconnect plug TS1 [5] from the electronics module. Measure the resistance.
2. Compare the sensor resistance to the curve.
3. In the event of severe deviation (> 10 %), replace the sensor.

Repairs (cont.)

Check collector temperature sensor

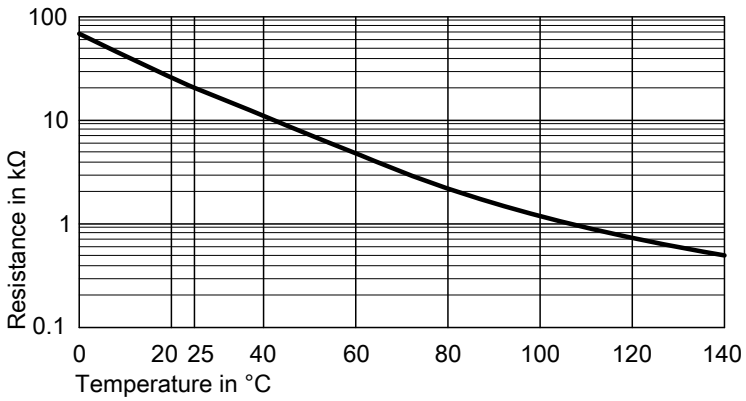


Fig. 54 Sensor type: NTC 20 kΩ

1. Disconnect plug TS2 [6] from the electronics module. Measure the resistance.
2. Compare the sensor resistance to the curve.
3. In the event of severe deviation (> 10 %), replace the sensor.

Fault during commissioning (fault F.416)

During commissioning, the control unit checks for correct placement of the flue gas temperature sensor. If fault message F.416 is displayed:

1. Check whether the flue gas temperature sensor is correctly installed (bayonet fitting). See previous diagram.
2. If required, correct the position of the flue gas temperature sensor.
3. Check the flue gas temperature sensor resistance. See previous chapter. Replace faulty flue gas temperature sensor if required.
4. Turn off the ON/OFF switch.
5. Turn the ON/OFF switch back on.
   Restart the commissioning assistant.
6. Check for leaks on the flue gas side.

Note
If fault message F.416 continues to be displayed although the flue gas temperature sensor has been correctly positioned: Initial commissioning may result in burner faults e.g. caused by air in the gas line. Eliminate the fault and unlock the device.

Information on replacing the HMU heat management unit and BCU burner control unit

If the burner control unit (BCU) is being replaced, commissioning is carried out with the "Service assistant" software tool.

Spare part installation instructions and **"www.service-assistent.info"**

Replacing the power cable

When replacing the power cable, only use the power cable available as a spare part from Viessmann.

Replacing the HMI connecting cable

Please note
Incorrect routing of the cable can lead to heat damage and impairment of the EMC properties. For positioning and securing of the cable (fixing point of the cable tie) see connecting cable installation instructions.

Repairs (cont.)

Checking the plate heat exchanger

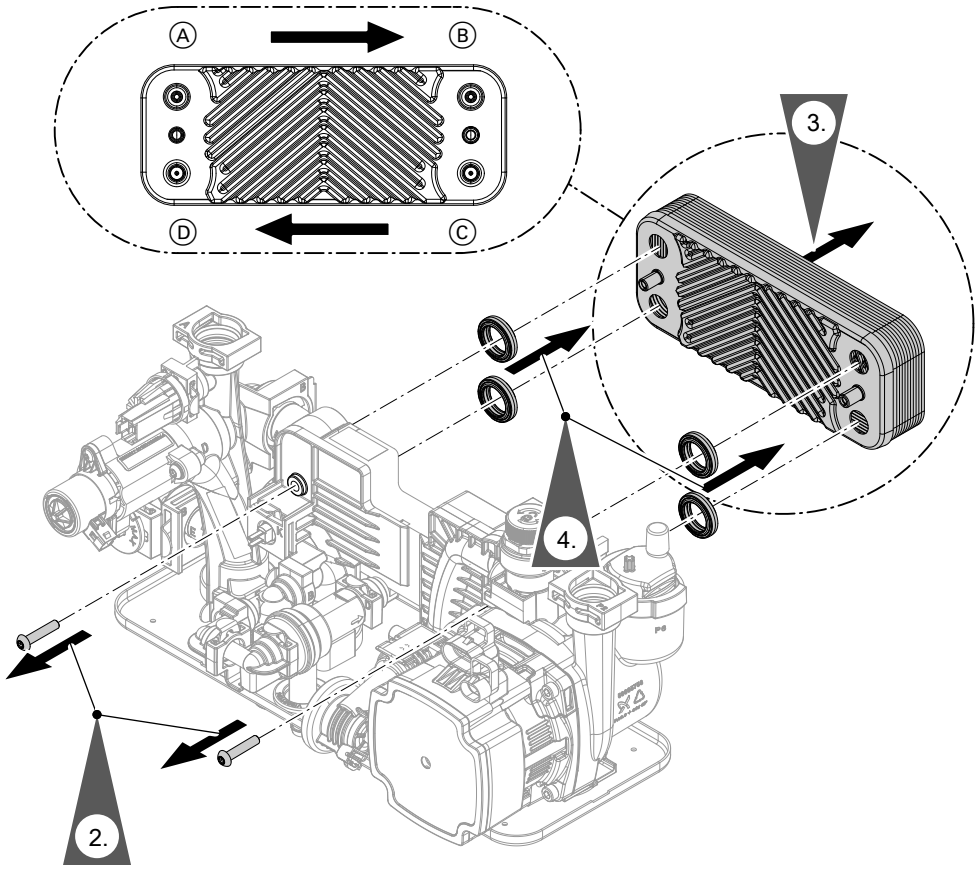


Fig. 55

Ⓐ Heating water flow
Ⓑ Heating water return
Ⓒ Cold water
Ⓓ DHW

1. Shut off and drain the boiler on the heating water and DHW sides.

2. Undo screws.

3. Remove plate heat exchanger.

Note
During and after removal, small amounts of water may trickle from the plate heat exchanger.

4. Remove gaskets and dispose of them.

5. Check connections on the DHW side for scaling. Clean or replace the plate heat exchanger as required.

6. Check connections on the heating water side for contamination. Clean or replace the plate heat exchanger as required.

7. Install plate heat exchanger in reverse order using new gaskets.
Screw torque: 3.2 Nm ± 0.2

Note
During installation, ensure the connections are positioned and the gaskets seated correctly.

⚠ **Danger**
Risk of electric shock from escaping heating water or DHW.
Check all water side connections for tightness.

Repairs (cont.)

Removing the hydraulic unit

In case hydraulic unit components have to be replaced.

Danger
Risk of electric shock from escaping heating water or DHW.
After installation, check all connections on the water side for leaks.

Repairs (cont.)

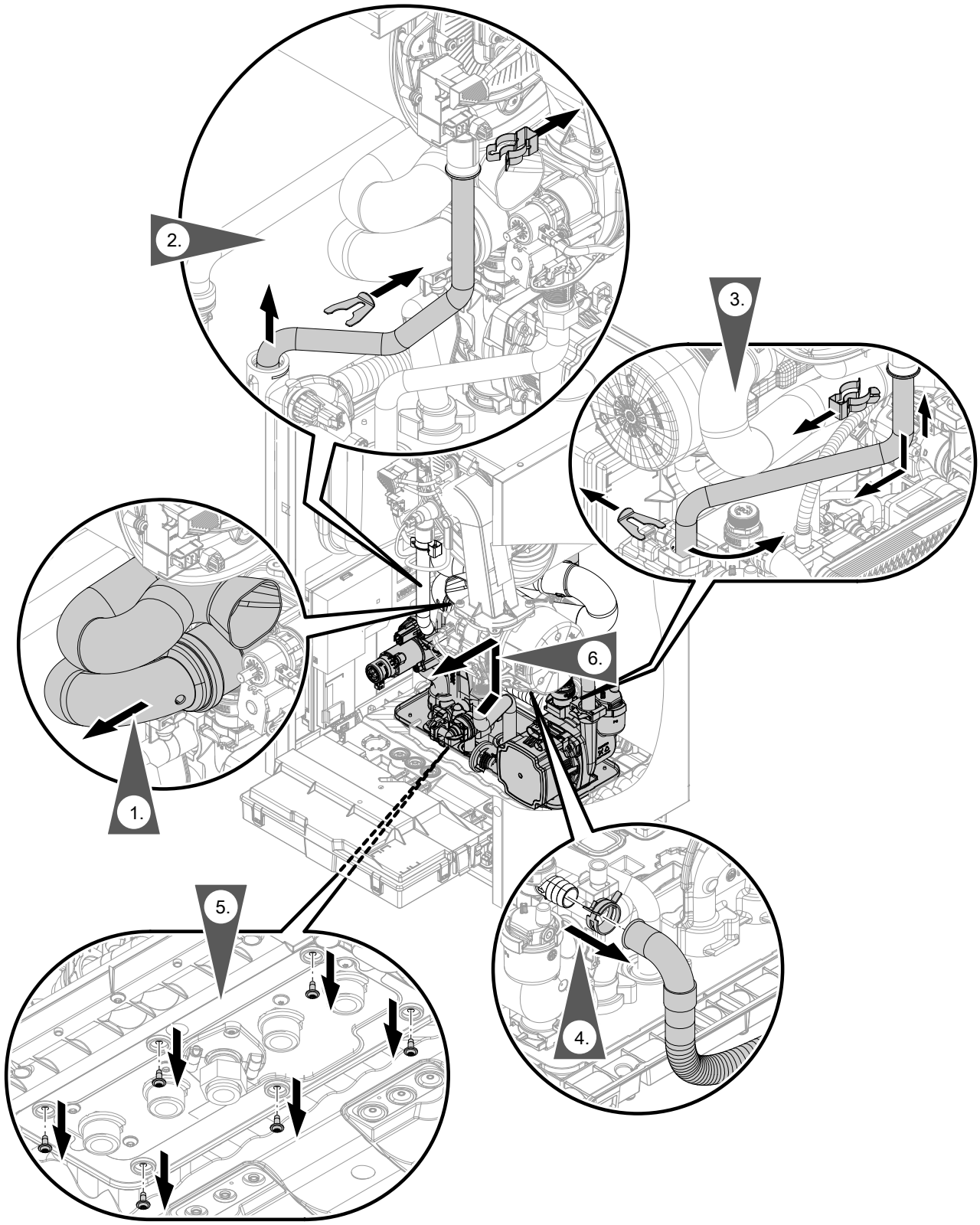


Fig. 56

Repairs (cont.)

Checking the fuse

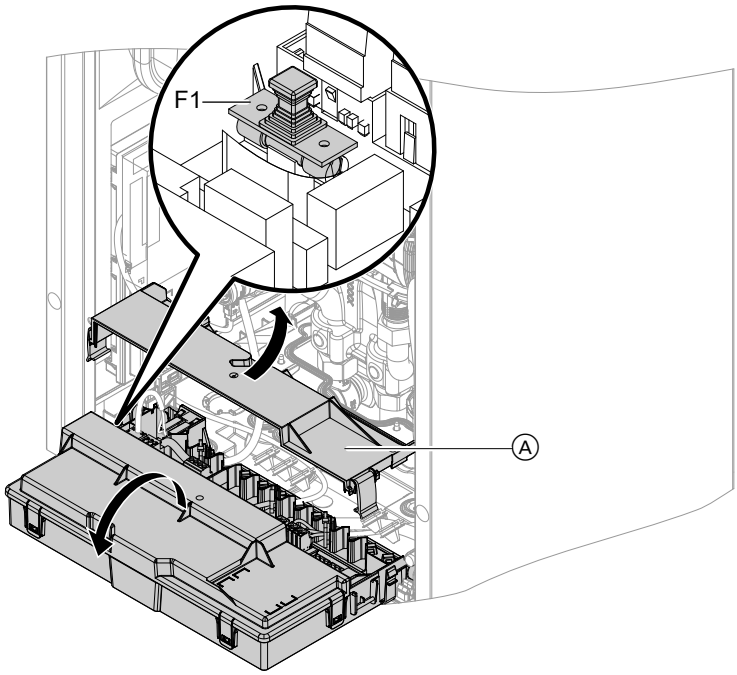


Fig. 57

1. Turn off the ON/OFF switch.
2. Depending on the configuration: Move programming unit together with bracket to service position.
3. Pivot the HMU heat management unit down.
4. Remove cover Ⓐ.
5. Check fuse F1 (see connection and wiring diagram).

Danger
Incorrect or improperly fitted fuses can lead to an increased risk of fire.
- Insert fuses without using any force. Position fuses correctly.
- Only use structurally identical types with the specified response characteristics.

Appliance functions

Heating mode

- **Weather-compensated operation:**
  The rooms are heated in accordance with the room temperature and time program settings.
  The control unit determines a set flow temperature for the heat generator, subject to the outside temperature, the room temperature and the slope/level of the heating curve.
- **Room temperature-dependent operation:**
  System with one heating circuit without mixer. The rooms are heated in accordance with the settings of the room temperature controller/room thermostat (accessories).
  If the room temperature controller/room thermostat issues a demand, the standard set flow temperature is maintained. If there is no demand present, the reduced set flow temperature is maintained.
- **Continuous operation without room thermostat:**
  The rooms are heated according to the time program settings.
  In the time phases at standard room temperature, the standard set flow temperature or the set comfort flow temperature is maintained. Outside the set time phases, the reduced set flow temperature is maintained.

Heating circuit pump connection for heating circuit without mixer

Only for systems with several heating circuits.
If a heating circuit without mixer is connected downstream of the low loss header, the circulation pump is connected to output P2. The function of the output is set in the commissioning assistant.

To start the commissioning assistant: See "Commissioning, inspection and maintenance".

If output P2 is being used for another function, the circulation pump can be connected to output P1 or an EM-P1 extension (accessories).

Venting program

During the venting program, the circulation pump will be alternately switched on and off for 30 s over a period of 20 min.
The diverter valve alternates between heating and DHW heating for a given time. The burner is switched off during the venting program.

Activate venting program: See "Commissioning, inspection and maintenance".

Filling program

In the delivered condition, the diverter valve is set to its central position, so the system can be filled completely. After the control unit has been switched on, the diverter valve no longer goes into its central position. If the system is to be filled with the control unit switched on, the diverter valve is moved in the filling program to its central position and the pump is started.

Activate filling program: See "Commissioning, inspection and maintenance".

In this position, the control unit can be switched off and the system can be filled completely. When the function is enabled, the burner shuts down. The program automatically becomes inactive after 20 min.

Heating curve

The heating curves represent the relationship between the outside temperature and the flow temperature. Simplified: The lower the outdoor temperature, the higher the flow temperature must be in order to reach the room temperature set point.

Factory settings:
- Slope = 1.4
- Level = 0

Appliance functions (cont.)

Note
If heating circuits with mixer are present in the heating system: The flow temperature of the heat generator is one differential temperature higher than the flow temperature for the heating circuits with mixer. Differential temperature in delivered condition set to 8 K.

The differential temperature can be adjusted using the following parameters:
- *Heating circuit 2: Parameter 934.5*
- *Heating circuit 3: Parameter 935.5*
- *Heating circuit 4 (if installed): Parameter 936.5*

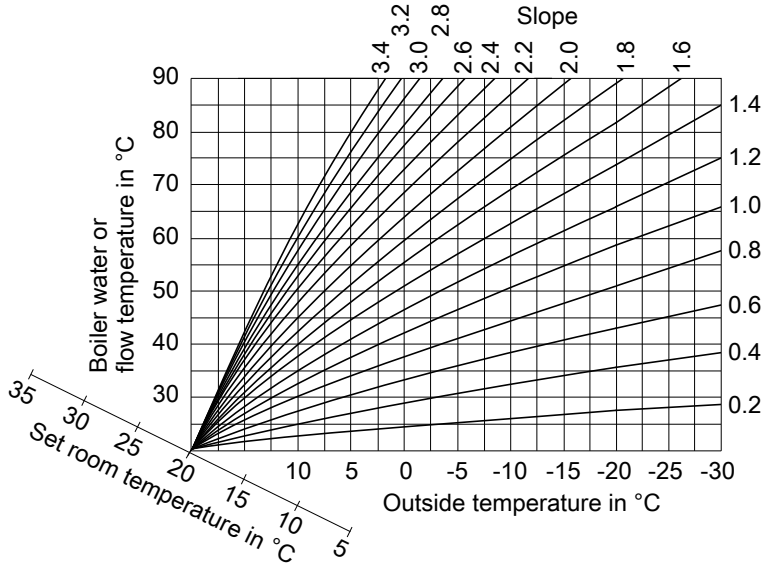


Fig. 58

Slope setting ranges:
- Underfloor heating systems: 0.2 to 0.8
- Low temperature heating systems: 0.8 to 1.6

Set room temperature

Standard room temperature or comfort room temperature

Individually adjustable for each heating circuit.
The heating curve is offset along the set room temperature axis. The start and stop points of the heating circuit pumps depend on the Heating limit... outside temperature, heating circuit... setting.

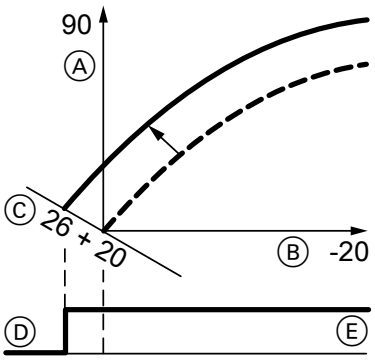


Fig. 59 Example 1: Adjusting the set room temperature from 20 to 26 °C

Ⓐ Flow temperature in °C
Ⓑ Outside temperature in °C
Ⓒ Set room temperature in °C
Ⓓ Heating circuit pump "Off"
Ⓔ Heating circuit pump "On"

Changing the set room temperature

Operating instructions

Appliance functions (cont.)

Reduced room temperature

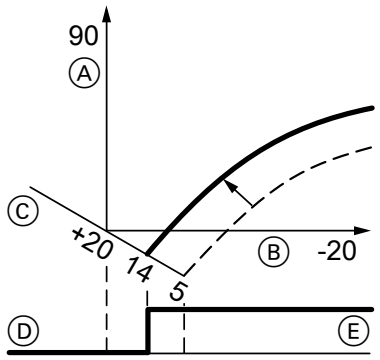


Fig. 60 Example 2: Adjusting the reduced set room temperature from 5 °C to 14 °C

Ⓐ Flow temperature in °C
Ⓑ Outside temperature in °C
Ⓒ Set room temperature in °C
Ⓓ Heating circuit pump "Off"
Ⓔ Heating circuit pump "On"

Changing the reduced set room temperature

Operating instructions

Change curve and level

Individually adjustable for each heating circuit.

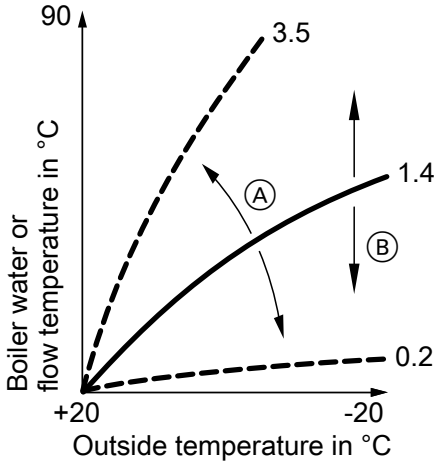


Fig. 61

Ⓐ Changing the slope
Ⓑ Changing the level (vertical parallel offset of the heating curve)

Raising the flow temperature of the heating circuits during operation with room temperature hook-up

The higher the value, the greater the influence of the room temperature on the set flow temperature of the heating circuit.

Room influence factor parameter

Heating circuit	Parameter
1 (without mixer)	933.7 (not assigned)
2 (with mixer)	934.7
3 (with mixer)	935.7
4 (with mixer)	936.7

Example for determining the increase in the flow temperature using the value of the heating curve when the actual room temperature deviates from the set room temperature:
- Set room temperature = 20.0 °C
- Actual room temperature = 18.0 °C
- Heating curve slope =1.4
- Room influence factor = 8 (delivered condition)

Determining the increase in flow temperature

(RT set - RT actual) x (1 + slope) x room influence factor/4 = raising the flow temperature via heating curve value
(20 - 18) x (1 + 1.4) x 8/4 = 9.6
Increase in flow temperature via heating curve value = 9.6 K

Screed drying

When enabling screed drying, observe the information provided by the screed manufacturer.

When screed drying is activated, the heating circuit pumps of **all** heating circuits are switched on and the flow temperature is maintained at the set profile. After completion (30 days), the heating circuits with mixer are automatically controlled with the set parameters.

Appliance functions (cont.)

Note
During screed drying, DHW heating is not available.

Observe EN 1264. The report to be provided by the heating contractor must contain the following details regarding heat-up:
- Heat-up data with the relevant set flow temperatures
- Max. flow temperature achieved.
- Operating state and outside temperature at handover

Different temperature profiles can be set via parameter 897.0.

Parameter 897.0 "Screed drying":

Temperature profile 1 (EN 1264-4)

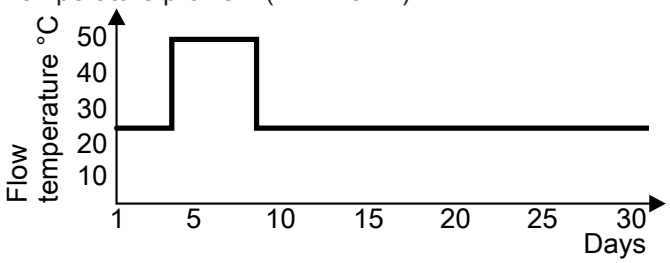


Fig. 62

Temperature profile 2 (ZV parquet and flooring technology)

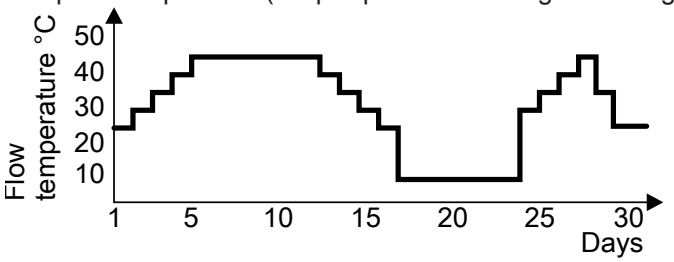


Fig. 63

Temperature profile 3

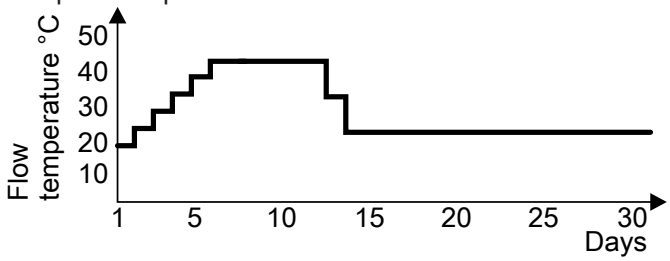


Fig. 64

Temperature profile 4

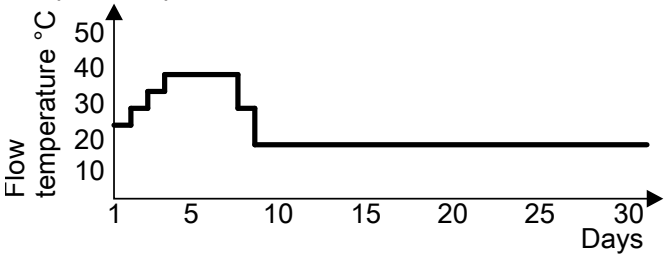


Fig. 65

Note
Temperature profile 6 ends after 21 days.

The function continues after a power failure or after the control unit has been switched off. When screed drying has completed or been manually switched off, the system is regulated in accordance with the selected parameters.

Appliance functions (cont.)

Temperature profile 5

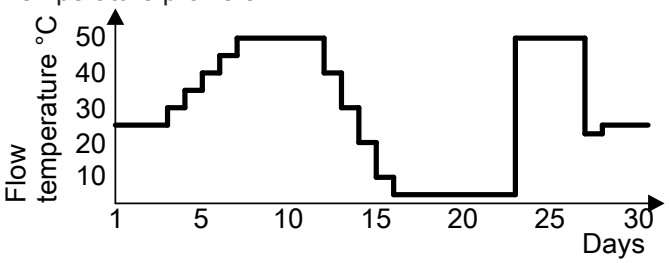


Fig. 66

Temperature profile 6

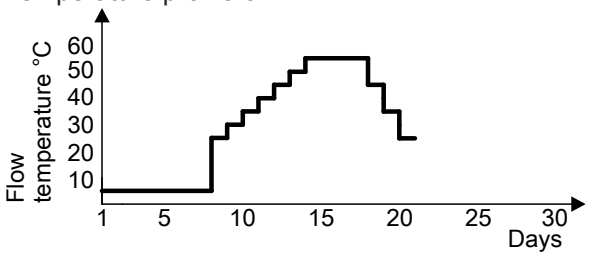


Fig. 67 Ends after 21 days.

Raising the reduced room temperature

During operation at reduced room temperature, the reduced set room temperature can be automatically raised subject to the outside temperature. The temperature is raised in accordance with the selected heating curve, and no higher than the standard set room temperature or comfort room temperature. Depending on which set room temperature will become active in the next time phase.

The outside temperature limits for the start and end of temperature raising can be set in parameters 1139.0 and 1139.1.

Appliance functions (cont.)

Example using the settings in the delivered condition

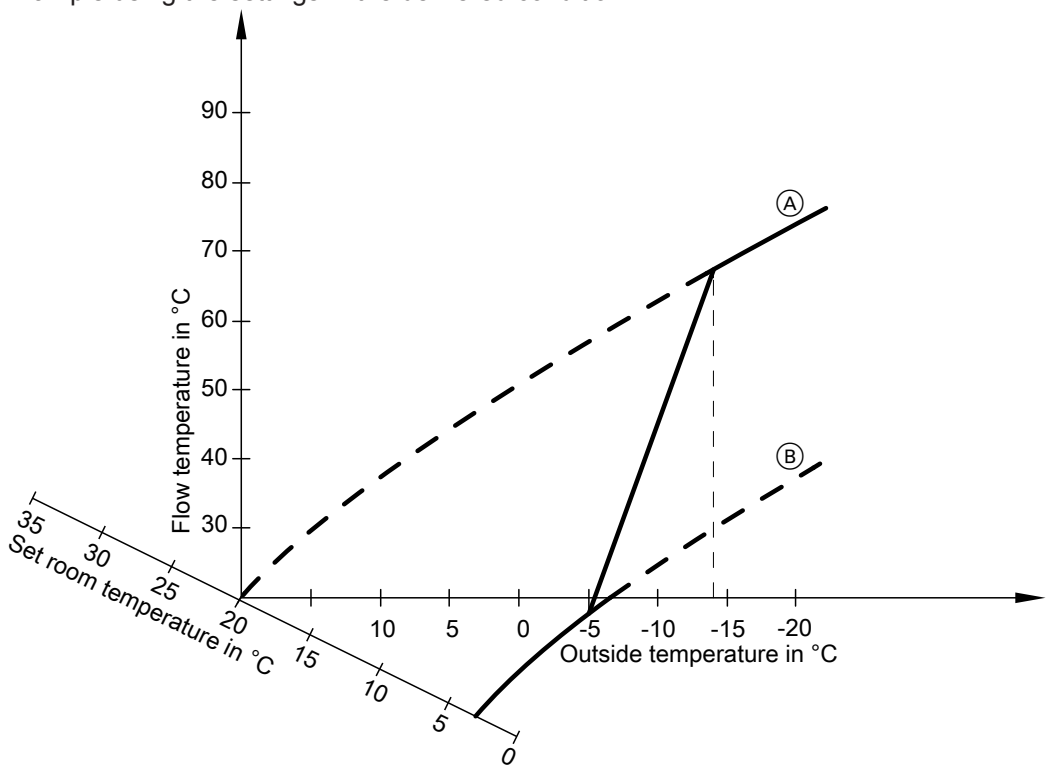


Fig. 68

Ⓐ Heating curve for operation at standard room temperature or comfort room temperature
Ⓑ Heating curve for operation at reduced room temperature

Reducing the heat-up time

During the transition from operation at reduced room temperature to operation at standard room temperature or comfort room temperature, the flow temperature will be raised in accordance with the selected heating curve.

The value and duration of the additional increase in the set flow temperature is adjusted in parameters 424.3 and 424.4.

Appliance functions (cont.)

Example

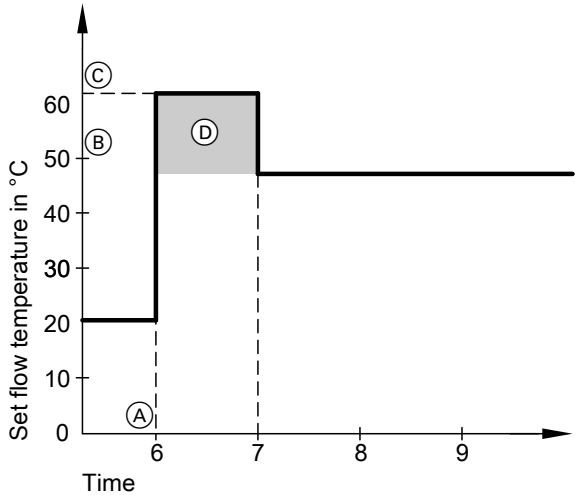


Fig. 69

Ⓐ Start of operation at standard room temperature or comfort room temperature
Ⓑ Set flow temperature in accordance with the set heating curve
Ⓒ Set flow temperature in accordance with parameter 424.3
Ⓓ Duration of operation with higher set flow temperature in accordance with parameter 424.4: 60 min

DHW heating

The burner, the circulation pump and the 3-way diverter valve are started or changed over if the cylinder temperature lies 2.5 K below the set cylinder temperature.
In the delivered condition, the set boiler water temperature is 20 K higher than the set cylinder temperature.
If the actual cylinder temperature exceeds the set cylinder temperature by 2.5 K, the burner shuts down and the circulation pump run-on time begins.

⚠ **Danger**
Risk of injury due to increased DHW temperature.

Inform the system user of the risk from the raised outlet temperature at the draw-off points.
- Gas condensing system boiler:
  If the set DHW temperature is set to over 60 °C
- Gas condensing combi boiler:
  If there are several draw-off events in quick succession or several appliance calibration processes

Increased DHW hygiene

The DHW can be heated to a specified (higher) set DHW temperature (approx. 70 °C) for a period of one hour.

⚠ **Danger**
Risk of injury due to increased DHW temperature.
Inform the system user of the risk from the raised outlet temperature at the draw-off points.
If required, provide on-site scald protection measures.

HMU heat management unit

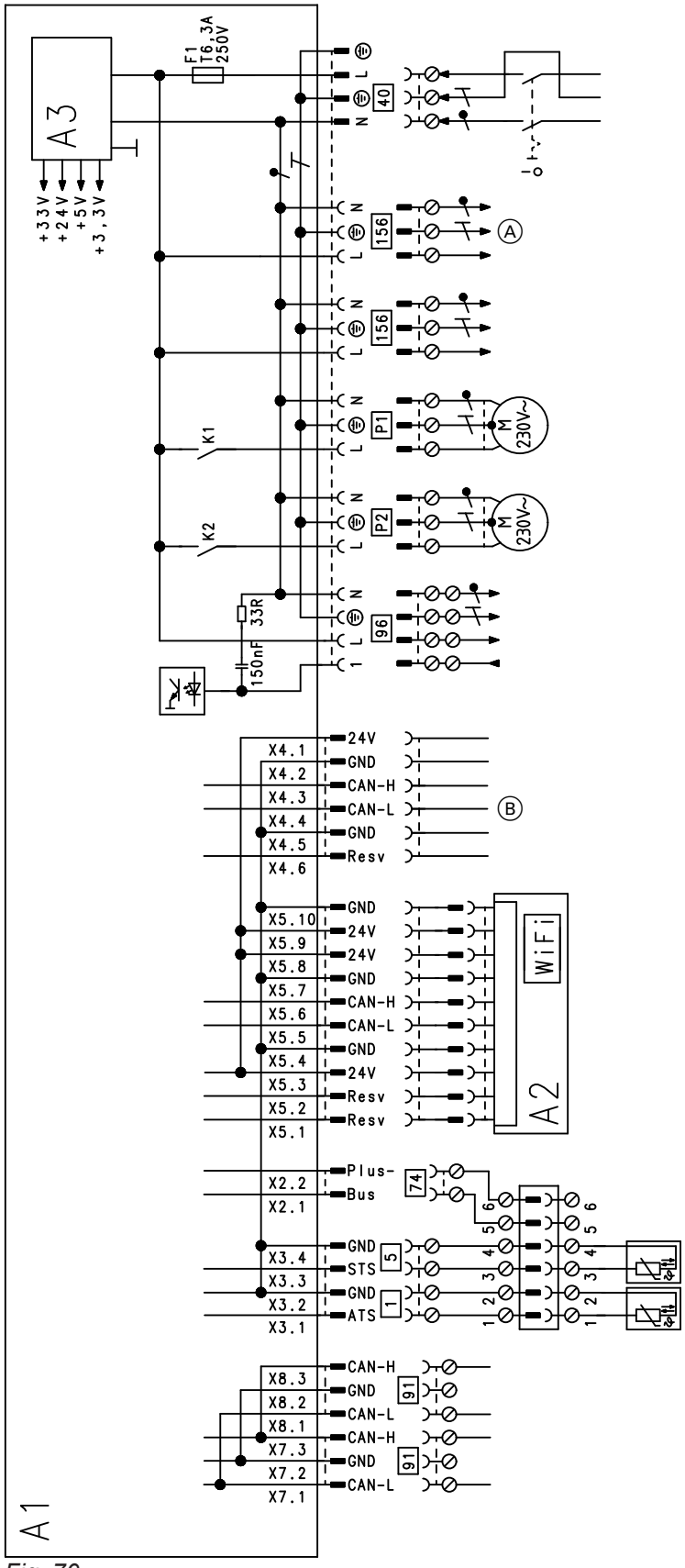


Fig. 70

A1 HMU heat management unit
A2 HMI programming unit with RF module (wireless module)
A3 Switching mode power supply
X... Electrical interfaces

1 Outside temperature sensor
5 Cylinder temperature sensor (gas condensing system boiler)
40 Power supply
74 PlusBus

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HMU heat management unit (cont.)

91 CAN bus
96 Floating input 230 V, output 230 V
156 Mains voltage output
P1 Output 230 V for:
- Circulation pump for cylinder heating
- Circulation pump for heating circuit without mixer

P2 Output 230 V for:
- Circulation pump for heating circuit without mixer
- DHW circulation pump

Ⓐ To BCU burner control unit
Ⓑ To BCU burner control unit

BCU burner control unit

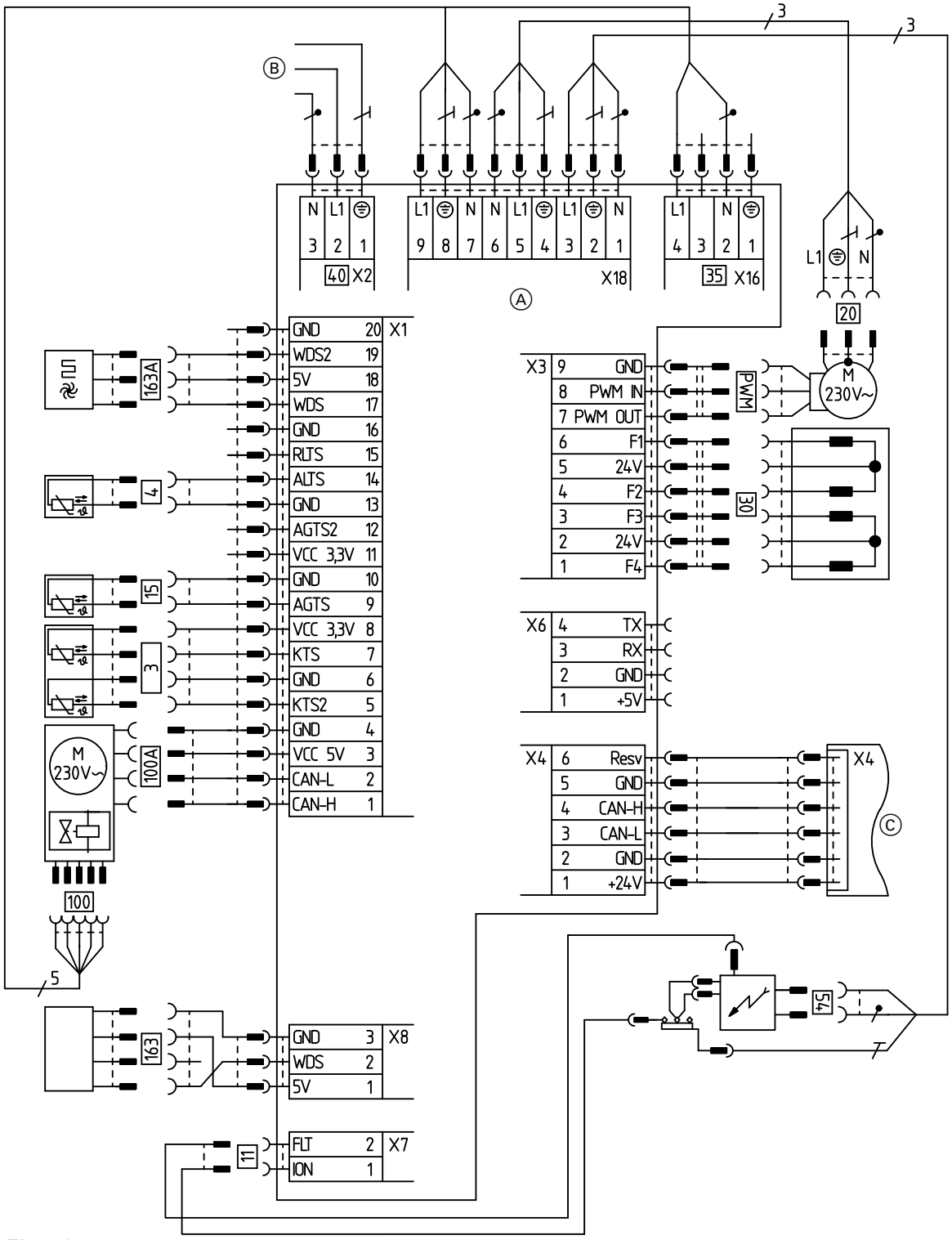

Fig. 71

PWM	Control signal	35	Gas solenoid valve
X...	Electrical interfaces	40	Power supply
3 A/B	Flow temperature sensors 1 and 2	54	Ignition unit
4	Outlet temperature sensor (gas condensing combi boiler)	100	Fan motor
		100 A	Fan motor control
11	Ionisation electrode	163	Water pressure sensor
15	Flue gas temperature sensor	Ⓐ	BCU burner control unit
20	Internal circulation pump (primary circuit pump)	Ⓑ	HMU heat management unit (plug 156)
30	3-way diverter valve	Ⓒ	HMU heat management unit (plug X4)

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Commissioning/service reports

Settings and test values		Set value	Commissioning	Maintenance/ service	Maintenance/ service
Date					
Signature					
Static pressure	mbar kPa	≤ 57.5 ≤ 5.75			
Supply pressure (flow pressure)					
☐ For natural gas	mbar kPa	See table "Supply pressure" (Commissioning ...)			
☐ For LPG	mbar kPa				
☐ *Enter gas type*					
Carbon dioxide content CO_2 For natural gas					
▪ At lower heating output	% by vol.	See "Checking the combustion quality" (Commissioning ...)			
▪ At upper heating output	% by vol.				
For LPG					
▪ At lower heating output	% by vol.				
▪ At upper heating output	% by vol.				
Oxygen content O_2					
▪ At lower heating output	% by vol.				
▪ At upper heating output	% by vol.				
Carbon monoxide content CO					
▪ At lower heating output	ppm	< 1000			
▪ At upper heating output	ppm	< 1000			

Specification

Gas condensing system boiler (type B2HE)					
Rated heating output range (details to EN 15502)					
T_F/T_R = 50/30 °C (P(50/30))					
Natural gas	**kW**	**1.9 - 11**	**1.9 - 19**	**1.9 - 25**	**1.9 - 32**
LPG, natural gas M	**kW**	**2.5 - 11**	**2.5 - 19**	**2.5 - 25**	**2.5 - 32**
T_F/T_R = 80/60 °C (Pn(80/60))					
Natural gas	**kW**	**1.7 - 10.1**	**1.7 - 17.4**	**1.7 - 22.9**	**1.7 - 29.3**
LPG, natural gas M	**kW**	**2.2 - 10.1**	**2.2 - 17.4**	**2.2 - 22.9**	**2.2 - 29.3**
Rated heating output for DHW heating					
Natural gas	kW	1.7 - 17.4	1.7 - 17.4	1.7 - 22.9	1.7 - 29.3
LPG, natural gas M	kW	2.2 - 17.4	2.2 - 17.4	2.2 - 22.9	2.2 - 29.3
Rated heat input (Qn)					
Natural gas	kW	1.8 - 10.3	1.8 - 17.8	1.8 - 23.4	1.8 - 29.9
LPG, natural gas M	kW	2.3 - 10.3	2.3 - 17.8	2.3 - 23.4	2.3 - 29.9
Rated heat input for DHW heating (Qnw)	kW	17.8	17.8	23.4	29.9
Product ID		CE-0085CT0017			
IP rating		IP X4 to EN 60529			
NO_X	Category	6	6	6	6
Gas supply pressure		See type plate			
Max. permissible gas supply pressure[*1]		See table "Supply pressure" (Commissioning ...)			
Rated voltage	V	230			
Rated frequency	Hz	50			
Appliance protection	A	6.3			
Backup fuse (power supply)	A	16			
RF module (integral)					
WiFi frequency band	MHz	2400 - 2483.5			
Max. transmitting power	dBm	17			
Zigbee frequency band	MHz	2400 - 2483.5			
Max. transmitting power	dBm	10			
Supply voltage	V ⎓	24			
Power consumption	W	4			
Power consumption (delivered condition)	W	37	47	68	92
Permissible ambient temperature					
▪ During operation	°C	+5 to +40			
▪ During storage and transport	°C	-5 to +60			
Electronic temperature limiter setting (TN)	°C	91			
Setting of electronic temperature limiter	°C	110			
Weight					
▪ Without heating water	kg	33.0	33.0	33.0	33.0
▪ With heating water	kg	38.6	38.6	38.6	38.6
Permiss. operating pressure (PMS)	bar MPa	3 0.3	3 0.3	3 0.3	3 0.3
Max. DHW temperature	°C	70	70	70	70
Dimensions					
Length	mm	360	360	360	360

[*1] *If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.*

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Specification (cont.)

Rated heating output range (details to EN 15502)					
T_F/T_R = 50/30 °C (P(50/30))					
Natural gas	**kW**	**1.9 - 11**	**1.9 - 19**	**1.9 - 25**	**1.9 - 32**
LPG, natural gas M	**kW**	**2.5 - 11**	**2.5 - 19**	**2.5 - 25**	**2.5 - 32**
T_F/T_R = 80/60 °C (Pn(80/60))					
Natural gas	**kW**	**1.7 - 10.1**	**1.7 - 17.4**	**1.7 - 22.9**	**1.7 - 29.3**
LPG, natural gas M	**kW**	**2.2 - 10.1**	**2.2 - 17.4**	**2.2 - 22.9**	**2.2 - 29.3**
Width	mm	450	450	450	450
Height	mm	700	700	700	700
Gas connection	R	¾	¾	¾	¾
Flue gas connection	Ø mm	60	60	60	60
Ventilation air connection	Ø mm	100	100	100	100
Connection values relative to max. load					
With gas					
Natural gas E	m^3/h	1.88	1.88	2.48	3.16
Natural gas LL	m^3/h	2.19	2.19	2.88	3.68
LPG	kg/h	1.38	1.38	1.82	2.32
Flue gas values					
▪ Mass flow rate (for DHW heating), natural gas	g/s	31.7	31.7	41.6	54.9
▪ Mass flow rate (for DHW heating), LPG	g/s	30.1	30.1	41	53.9
▪ Temperature (for DHW heating)	°C	64	65	67	72
▪ Max. temperature	°C	120	120	120	120

Gas condensing combi boiler (type B2KE)

Rated heating output range (details to EN 15502)				
T_F/T_R = 50/30 °C (P(50/30))				
Natural gas	**kW**	**1.9 - 19**	**1.9 - 25**	**1.9 - 32**
LPG, natural gas M	**kW**	**2.5 - 19**	**2.5 - 25**	**2.5 - 32**
T_F/T_R = 80/60 °C (Pn(80/60))				
Natural gas	**kW**	**1.7 - 17.4**	**1.7 - 22.9**	**1.7 - 29.3**
LPG, natural gas M	**kW**	**2.2 - 17.4**	**2.2 - 22.9**	**2.2 - 29.3**
Rated heating output for DHW heating				
Natural gas	kW	1.7 - 26.8	1.7 - 31.1	1.7 - 34.2
LPG, natural gas M	kW	2.2 - 26.8	2.2 - 31.1	2.2 - 34.2
Rated heat input (Qn)				
Natural gas	kW	1.8 - 17.8	1.8 - 23.4	1.8 - 29.9
LPG, natural gas M	kW	2.3 - 17.8	2.3 - 23.4	2.3 - 29.9
Rated heat input for DHW heating (Qnw)	kW	27.3	31.7	34.9
Product ID		CE-0085CT0017		
IP rating		IP X4 to EN 60529		
NO_X	Category	6	6	6
Gas supply pressure		See type plate		
Max. permissible gas supply pressure[*2]		See table "Supply pressure" (Commissioning ...)		
Rated voltage	V	230		

[*2] *If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.*

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Specification (cont.)

Rated heating output range (details to EN 15502)				
T_F/T_R = 50/30 °C (P(50/30))				
Natural gas	**kW**	**1.9 - 19**	**1.9 - 25**	**1.9 - 32**
LPG, natural gas M	**kW**	**2.5 - 19**	**2.5 - 25**	**2.5 - 32**
T_F/T_R = 80/60 °C (Pn(80/60))				
Natural gas	**kW**	**1.7 - 17.4**	**1.7 - 22.9**	**1.7 - 29.3**
LPG, natural gas M	**kW**	**2.2 - 17.4**	**2.2 - 22.9**	**2.2 - 29.3**
Rated frequency	Hz		50	
Appliance protection	A		6.3	
Backup fuse (power supply)	A		16	
RF module (integral)				
WiFi frequency band	MHz		2400 - 2483.5	
Max. transmitting power	dBm		17	
Zigbee frequency band	MHz		2400 - 2483.5	
Max. transmitting power	dBm		10	
Supply voltage	V ⎓		24	
Power consumption	W		4	
Power consumption (delivered condition)	W	47	68	92
Permissible ambient temperature				
▪ During operation	°C		+5 to +40	
▪ During storage and transport	°C		-5 to +60	
Electronic temperature limiter setting (TN)	°C		91	
Setting of electronic temperature limiter	°C		110	
Weight				
▪ Without heating water	kg	34.5	34.5	34.5
▪ With heating water	kg	40.6	40.6	40.6
Permiss. operating pressure (PMS)	bar	3	3	3
	MPa	0.3	0.3	0.3
DHW heating				
Permiss. operating pressure (PMW)	bar	10	10	10
	MPa	0.1	0.1	0.1
Specific flow rate (D)	l/min	14.45	15.69	17
Max. DHW temperature	°C	60	60	60
Comfort factor	Stars	3	3	3
Dimensions				
Length	mm	360	360	360
Width	mm	450	450	450
Height	mm	700	700	700
Gas connection	R	¾	¾	¾
Flue gas connection	Ø mm	60	60	60
Ventilation air connection	Ø mm	100	100	100

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Specification (cont.)

Rated heating output range (details to EN 15502)				
T_F/T_R = 50/30 °C (P(50/30))				
Natural gas	**kW**	**1.9 - 19**	**1.9 - 25**	**1.9 - 32**
LPG, natural gas M	**kW**	**2.5 - 19**	**2.5 - 25**	**2.5 - 32**
T_F/T_R = 80/60 °C (Pn(80/60))				
Natural gas	**kW**	**1.7 - 17.4**	**1.7 - 22.9**	**1.7 - 29.3**
LPG, natural gas M	**kW**	**2.2 - 17.4**	**2.2 - 22.9**	**2.2 - 29.3**
Connection values relative to max. load				
With gas				
Natural gas E	m^3/h	2.89	3.35	3.69
Natural gas LL	m^3/h	3.36	3.90	4.29
LPG	kg/h	2.12	2.46	2.71
Flue gas values				
▪ Mass flow rate (for DHW heating), natural gas	g/s	49.3	57.3	62.1
▪ Mass flow rate (for DHW heating), LPG	g/s	49.2	57.1	61.1
▪ Temperature (for DHW heating)	°C	70	74	77
▪ Max. temperature	°C	120	120	120

Note
The supply values are only for reference (e.g. in the gas contract application) or for a supplementary, rough estimate to check the volumetric settings. Due to factory settings, the gas pressure must not be altered from these values. Reference: 15 °C, 1013 mbar (101.3 kPa).

Type of flue system

Available in the following countries	**Type of flue system**
AE, AM, AT, BA, BG, BY, CH, CY, CZ, DK, EE, ES,FI, GB, GR, HR, HU, IE, IS, IT, KG, KZ, LI, LT, LU, LV, MT, NL, NO, PL, PT, RO, RS, RU, SE, SK, TR, UA	B_{23}, B_{33}, C_{13}, C_{33}, C_{43}, C_{53}, C_{63}, C_{83}, C_{93}
BE	B_{23}, B_{23P}, B_{33}, C_{13}, C_{33}, C_{43}, C_{53}, C_{83}, C_{83P}, C_{93}
DE, SI	B_{23}, B_{33}, C_{13X}, C_{33X}, C_{43X}, C_{53X}, C_{63X}, C_{83X}, C_{93X}
FR	B_{23}, B_{23P}, B_{33}, C_{13}, C_{33}, C_{43}, C_{53}, C_{63}, C_{83}, C_{83P} C_{93}

Gas categories

Available in the following countries	**Gas categories**
AE, AT, AM, BA, BG, BY, CH, CZ, DK, EE, ES, FI, GB, GR, HR, IE, IS, IT, KG, KZ, LI, LT, LU, LV, MT, NO, PT, RO, RS, RU, SE, SI, SK, TR, UA	II_{2N3P}/II_{2H3P}
AM, BY, KG, KZ, RU, UA	I_{2N}/I_{2H}
BE	I_{2N}
DE, FR	II_{2N3P}
CY	I_{3P}
FR, IT	I_{2HM}
HU	II_{2N3P}/II_{2HS3P}
NL	II_{2EK3P}
PL	II_{2N3P}/II_{2ELw3P}

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Electronic combustion control unit

The electronic combustion controller utilises the physical correlation between the level of the ionisation current and the air ratio λ. The maximum ionisation current is achieved at an air ratio of 1 for all gas qualities. The ionisation signal is evaluated by the combustion controller. The air ratio is regulated to a value that is between λ= 1.2 and 1.5. This range provides for an optimum combustion quality. Thereafter, the electronic gas train regulates the required gas volume subject to the prevailing gas quality.
To check the combustion quality, the CO_2 content or the O_2 content of the flue gas is measured. The prevailing air ratio is determined using the actual values.

To achieve optimum combustion control, the system regularly carries out an automatic self-calibration; also after power failures (shutdown). For this, the combustion is briefly regulated to maximum ionisation current (corresponding to air ratio λ=1). Self-calibration takes place shortly after the burner starts. The process lasts approx. 20 s during which higher than normal CO emissions may occur briefly.

Final decommissioning and disposal

Viessmann products can be recycled. Components and substances from the system are not part of ordinary household waste.

For decommissioning the system, isolate the system from the power supply and allow components to cool down where appropriate.
All components must be disposed of correctly.

Declaration of conformity

We, Viessmann Werke GmbH & Co. KG, D-35107 Allendorf, declare as sole responsible body that the named product complies with the European directives and supplementary national requirements in terms of its design and operational characteristics.

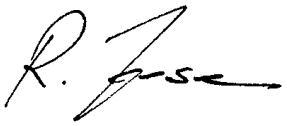
Using the serial number, the full Declaration of Conformity can be found on the following website:
www.viessmann.co.uk/eu-conformity

Manufacturer's certificate according to the 1st BImSchV [Germany]

We, Viessmann Werke GmbH & Co. KG, D-35107 Allendorf, confirm that the product **Vitodens 200-W** complies with the NO_x limits specified by the 1st BImSchV, paragraph 6 [Germany].

Allendorf, 1 May 2018

Viessmann Werke GmbH & Co. KG



Authorised signatory Reiner Jansen
Head of Strategic Quality Management

Keyword index

Keyword index (cont.)

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